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BUSINESS CYCLES

VOLUME II

BUSINESS CYCLES

A Theoretical, Historical, and Statistical Analysis of the Capitalist Process

BY

JOSEPH A. SCHUMPETER

Professor of Economics, Harvard University

VOLUME II

McGRAW-HILL BOOK COMPANY, INC.

NEW YORK AND LONDON

1939

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PRINTED IN THE UNITED STATES OF AMERICA

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CHAPTER VIII

The Price Level

A. A Preliminary Warning.—The fact that price-level series are the first to be discussed should not be interpreted to mean that we consider them first in either causal or symptomatic importance. Businessmen, politicians, and many economists unite in drawing a picture which grossly exaggerates the role of price movements in the cyclical process. While for obvious reasons there is some excuse for this in the case of businessmen and politicians, only faulty analysis can account for it in the case of economists. The very definition, "the crisis is a break in prices," and still more propositions such as "the collapse of the price system is the real cause of a depression," betray failure to realize that the cycle is a process within which all elements of the economic system interact in certain characteristic ways and that no one element can be singled out for the role of prime mover. The mistake involved is, thus, much more fundamental than it would be if there really were any sense in searching the system of economic quantities for any single element responsible for the cycle, and if the theory alluded to merely seized upon a wrong one.

It should be abundantly clear from our theoretical discussion in the third and fourth chapters and from our historical discussion in the sixth and seventh, that price movements are not the all-important factor in the business cycle that they are sometimes held to be. We cannot too often repeat that price movements are not causal to the prosperity phases of our process; that prosperity can, and sometimes actually does, start from a falling price level; that those innovations which "ignite" prosperity do not presuppose, though they induce, an increase in prices but are profitable at the existing level; and that innovations which are not profitable at the existing level are maladjustments in the same sense as are all other operations that pay only because prices are rising. But rising prices, being part of the mechanism—as far as innovations are financed by credit creation and under ideal conditions of full employment—by which factors of production are directed toward their new employments, do create additional margins of profit. They have a dislocating influence which directly and also indirectly, by inducing error and condoning incapacity and misconduct, accounts for much that happens in the subsequent

periods of liquidation and helps to make them abnormal, *i.e.*, to turn them into depressions.

Again, a fall in prices is not the same as a fall in money earnings, which in turn is not the same as a fall in real earnings. It is necessary, in order to get into a sound frame of mind in matters of the business cycle, to divest oneself of the prejudice that a general fall in prices, such as would normally occur by virtue of the working of the cyclical mechanism, is in itself a catastrophe or necessarily productive of catastrophes; that falling prices must always spell misery; that they necessarily increase the burden of debt in any sense in which that would be synonymous with causing trouble; that they are incompatible with prosperous business; or that they are simply an unmixed evil which is to be prevented at any cost and which can be prevented without impairing the efficiency of the capitalist machine. But the cyclical fall in price level that occurs in recession is an element in a process of adjustment to the changes wrought by what happened in prosperity, and that process deals harshly with many people. As rising prices, so do falling prices become an intermediate cause of secondary phenomena, and they may also acquire a momentum of their own and then move, particularly during depression, in a way that does not lead to adjustment but spells additional disturbance.[1]

Our analysis, however, leads us to believe that at least the symptomatic value of price movements should be great. So it is, of course, but less so than we might think. For, as we shall see presently and as is obvious from common experience, neither prices of individual commodities, influenced as they must be by the particular conditions and policies prevailing in individual industries, nor the whole world of prices, however measured, can really be expected to keep a consistent relation to other series representing industrial conditions or to the processes that lie behind them. Most price series, to be sure, display traces of the cyclical movement and on the whole the association is fairly satisfactory. But we must be careful about prediction in any individual case and refrain from drawing far-reaching conclusions about cycles for periods in which price data are practically all we have.

Series of individual prices give rise to many complicated questions. Those that refer to finished products are fertile of practically insoluble difficulties about quality, local differences, and so on. However, these series have at least an obvious meaning. The same may, with some

[1] The distinction between the fall of prices in recession and in depression may facilitate agreement, at least as to diagnosis if not as to policy. So many extra-economic considerations and so many valuations of the interests affected enter into the latter that even perfect agreement in economic argument would help but little toward agreement about measures. Even the purely economic argument cannot be fully presented in this book. Various contributions to it, however, have been and will be offered at various turns of our way.

qualifications, be said of composites of prices of different, but related, commodities, which we will call Group Prices. Everyone knows the reasons that prompt us to construct price indices of motorcars in general or textiles in general. It is also common knowledge that such composites may be very misleading. We shall not go into the question of principle involved, the roots of which stretch far into general theory, but will confine ourselves to one remark. An index of this sort may give a picture that is free from many idiosyncracies of the price movements of the individual commodities which enter into it and may be useful for many purposes. It is, however, inadequate for our purpose because the internal shifts that such an index blots out may be the essential thing. If innovation results in one of the commodities in such a group pushing out another, the variations of their prices relative to each other are fundamental to the understanding of the cycle or cycles during which they occur. Obviously a composite consisting of the prices of cotton, wool, silk, and linen textiles from 1780 to 1830 would be almost valueless in a study of the business cycles of that period.[1]

But the general level of prices raises an entirely different problem. Here it is the very meaning of the thing that becomes doubtful. It has even been doubted whether there is any meaning to it at all or, less radically, whether the general level of prices measures a definite something that exists as such or is merely a statistical figure measuring, for instance, the common movement of individual prices or—not necessarily the same thing—what is common to the movements of all individual prices.[2] Most statisticians and economists in the long array of authors from Dutot and Carli onward did not bother about this at all and went ahead on such common-sense considerations as plausibility or absurdity of results and convenience of calculation, taking for granted the economic meaning of the procedure. It is hardly uncharitable to say that, with

[1] It should be observed, moreover, that indices of group prices will occasionally blur the cyclical picture in other ways also. We need only imagine a case in which all the constituent prices display strong cycles identical in everything but phase. There is plenty of justification for the toning down of the fluctuations that will result. But the specifically cyclical aspect of the prices will be partly, in the limiting case entirely, lost. This should be borne in mind also in the case of the general price level, which of course will display a smaller amplitude of fluctuations if, as is unavoidably the case, constituents do not move exactly in step. This is as it should be and will not mislead, provided we confine ourselves to considering the general price level as a monetary parameter only. *But if we took it to measure the average amplitude of fluctuations in individual prices, we should go completely astray.*

[2] Businessmen and representatives of business interests, when they speak of price levels, mostly mean only the price of their own product. In a pamphlet on the desirability of stabilization of the price level the writer found that the expression was used 36 times, without meaning once what it ought to mean, or in fact anything that can be usefully designated by the term,

the outstanding exceptions of Jevons and Edgeworth, they evolved and applied methods of measurement without knowing exactly what it was they wanted to measure. Progress has been made nevertheless, particularly by systematizing and analyzing criteria of choice between various formulae—a progress chiefly associated with the names of Irving Fisher (The Making of Index Numbers, 1922) and L. von Bortkiewicz (see Geld, II. Die Messung des Geldwertes; Handwörterbuch der Staatswissenschaften). And other lines of advance have been opened up by Pigou, Haberler, Frisch, Leontief, and others. But the particular question that concerns us is as yet so much debated, and in most cases so imperfectly stated, that we must try to state and answer it[1] before we can discuss in the light of our theoretical expectations the behavior of such indices as we have, or use them in "correcting" or "deflating" individual prices or other magnitudes expressed in monetary units.

B. The Theory of the Price Level.—Imagine, for simplicity's sake, an isolated society without money, the economic life of which merely consists in the current production of consumer's goods from original means of production, say, services of labor and of land. These consumers' goods are sold to the very laborers and landlords who furnish the productive services. Money and credit being absent[2] and unknown, equilibrium ratios of exchange will establish themselves between all pairs of economic goods. But there will be no absolute prices. Now express all these ratios in a common unit, for example, by putting the exchange value of an arbitrary quantity of any arbitrarily chosen commodity equal to unity. Thereby the ratios are turned into absolute quantities, which we call *prices*. If we want to change from this standard to another, we simply divide these prices by the price of some quantity of the new standard commodity in the old system. We do not need, however, any commodity standard of this sort, but can derive a unit by putting any combination of equilibrium market values equal to an arbitrary figure, for example, by ruling that the sum total of market value (prices times quantities sold in a period of account) of all consumers' goods be equal to 100 units or 100 billions of them. This will uniquely define the meaning of this—otherwise meaningless—unit in terms of every commodity, just as well as the choice of a standard commodity would. The obvious practical

[1] The solution to be presented derives from Walras. It has already been given by Professor François Divisia (L'Indice Monétaire, *Revue d'Économie Politique*, 1925, and Économique Rationelle, 1928, pp. 252–280), to whom belongs entirely whatever merit there is in the idea. Reference should also be made to the recent discussion in the *Review of Economic Studies*, vol. III.

[2] Unless, indeed, money is defined by the criterion of indirect exchange, in which case many commodities would function as money.

difficulties are not relevant to this argument. But, however we proceed in order to acquire the immense advantage of a *unit of calculation and clearing* (a "unit of account"), we must always introduce something that is arbitrary, both in the sense that the system of quantities of commodities and exchange ratios does not itself determine it, and in the sense that the particular decision is—as long as the same equilibrium persists—entirely immaterial. Also, any change would be immaterial if all prices and all the other monetary magnitudes could be instantaneously and perfectly adapted to it.

The social decision which, in order to bring prices into existence, it is necessary to add to the other conditions that determine the system of economic quantities need not, of course, consist in any conscious act, which it would be practically impossible to perform. It may, and historically did, come about by way of the growth of a social habit, which evolved the special—and logically rather abnormal—case of the commodity standard. What matters here is merely the fact that such an arbitrary choice, however it comes about and whatever particular form it takes, supplies the additional equation that we need in order to have uniquely determined absolute prices. Without a unit's being given in which to express prices or, as we may now say, without the choice of a *level of prices*, these would be indeterminate because it is only their relations to each other which are determined by the system itself.

Hence the price level, or monetary parameter, is not a mere statistical aggregate or a mean like the average height of recruits of a given age in a given population, but a real thing existing independently of the statistician and to be distinguished from the relations of prices to each other, which we shall designate as the *price system*.[1] It is not of the same nature as a group index, and is more than merely the most comprehensive of them. Considerations of convenience of calculation enter no doubt into the practical method of its measurement in a secondary way, *but not into its concept*. There is, in the same sense, no question of weighting or averaging. Considerations of plausibility have no place at all. The various tests of index numbers have to be replaced, for our purposes, by the single question whether, and how accurately, a given formula expresses the changes in that parameter. It follows, moreover, that the price level, so defined, is not itself a price and cannot usefully be described in terms of supply and demand, for these categories apply only within the world of individual commodities. And it also follows that considerations of utility or welfare or of the so-called subjective value of money, which may move in opposite directions for people with different budget combinations,

[1] This term is used in the same sense, we believe, by Professor Mills in Behavior of Prices.

are not relevant either to our concept of price level or to the method of measuring it.[1]

That social decision then fixes the price level for the equilibrium state of the economic system which obtains at the moment; but it would stay as thus fixed only in a perfectly stationary society. In that case, however, there would be as little meaning to the question what the value of the price level is as there would be to the analogous question in the case of a potential. In reality the price level changes all the time without any change in the social decision itself. For practically every change that occurs in the economic process affects it, and it is extremely unlikely that changes will occur precisely in such a way as to compensate their effects on it. In particular, if nothing at all happens in the sphere of money and credit, the price level will nevertheless undergo variations. And there is not only meaning but obvious importance to the problem of measuring them. This problem would be easy to solve, if the price system did not change, *i.e.*, if prices never changed except proportionally. We could then read off the change in the price level from the change in any one price. Unfortunately, however, the price system also could remain constant only in a stationary society. As a matter of fact, it changes in time just as frequently as the price level. Hence, the price of any individual commodity, as we observe it at any point of time, must be interpreted as the result of two distinct components: the price level and the price system. It is also easy to see that changes in the level can in practice hardly ever come about except by way of changes in the system—even as changes in the system in practice hardly ever come about without enforcing a change in the price level. Yet the two components of change, however inextricably mixed, are logically distinct. We have not understood a given change in prices in general or in any single price as long as we have not quantitatively separated them. Hence the question: Seeing that we have only the actual prices, is there any means of doing so?

If the system changed as well as the level, while the quantities of all commodities remained constant, the variations of total actual expenditure would exactly measure the changes in the price level, whatever happened to the individual prices. If quantities also change, the problem becomes, strictly speaking, insoluble. But here the differential method of analysis comes to our rescue. Given the usual conditions of differentiability in the

[1] This is important to bear in mind, because recent discussion has precisely turned on the utility aspect in order to define equivalence of different collections of income goods in different points of time. This equivalence, in turn, is made to yield a criterion for the change that may have occurred in the "purchasing power" of the monetary unit. From this standpoint, Professor Haberler has very naturally been led to deny the existence of any general price level. But all this, important as it is for other purposes, does not concern us here, and argument on these lines is as irrelevant for our purpose as our argument is for welfare considerations.

(smoothed) time sequence of the relevant magnitudes, we may still disentangle the rate of change of the price level at any given moment of time. For this purpose, we start from the expenditure on every one of our, say, n commodities, equal to its price p_i times its quantity q_i ($i = 1 \cdots n$) bought at any time, form the total differential (rate of change of expenditure)

$$d(p_iq_i) = q_idp_i + p_idq_i$$

and sum over all commodities, so as to get, if total expenditure be E,

$$dE = \sum_{i=1}^{i=n} q_idp_i + \sum_{i=1}^{i=n} p_idq_i$$

Now, the dq's being the increments, positive or negative, of the quantities of commodities, Σp_idq_i, that is, these increments times the "old" prices, gives approximately that part of the variation in expenditure which is balanced as to its effects on the level by the quantity changes, and by which expenditure would have had to change in order to keep prices constant, if their system had not changed, *or at least the price level, if the system has changed.* To put it in still another way, if expenditure had changed exactly by Σp_idq_i, so that $\Sigma q_idp_i = 0$, that part of the new total of expenditure would have remained constant which does not buy the new positive or negative increments and may be looked upon as expended on the same kinds and quantities of commodities as before. But, with unchanging kinds and quantities of commodities, constant expenditure defines identical price levels. And as there cannot be, at one time, two price levels with respect to the same commodities, the price level would be the same as before. Hence, for a change in the price level to occur, it is necessary and sufficient that $\Sigma q_idp_i \neq 0$, and the departure from zero of this quantity, therefore, approximately measures, by its relation to Σp_iq_i, the change that actually occurred.

We see the principle. It consists in reducing the unmanageable, but general, case—that of simultaneous change in level, system, and quantities—to the manageable case of unchanging quantities, which is always implied in the general case and can be extricated from the rest if changes are small. This means, of course, that the solution is but an approximation and that any method based upon it breaks down if the changes in individual prices or quantities cannot be decomposed into small ones.[1] It also means that comparisons of levels are possible only between

[1] It breaks down, therefore, in times of sudden and violent changes, such as extreme inflation. It does not, however, break down because of the introduction of new commodities, provided they do not suddenly intrude in quantities that are big with reference to all the others. How far an index of this nature fulfills Professor Fisher's tests cannot be dis-

neighboring points of time, and that the states of things obtaining at finitely distant points of time cannot be compared directly but only by way of all intermediate points. In practice, of course, smallness of distance may be interpreted somewhat less strictly. Dividing monetary magnitudes by an index of this kind means the elimination from them of the influence of changes in the significance of the monetary unit *i.e.*, of a factor, the action of which makes their comparison all but meaningless and which is itself meaningless insofar as the really relevant elements of economic life, quantities of commodities and ratios of exchange, are concerned. This is what is here meant by "deflating" sequences of items expressed in "current dollars."[1]

Next we have to find out which of the better known formulae may be considered satisfactory, or approximately so, from the standpoint of this theory. Of course we are not concerned with any of the many special-purpose indices, which, as the reader will realize by now, have nothing to do with measuring the price level in our sense, although the word *level* invariably occurs in association with them, and although their construction may be amply justified by the purposes they are to serve.

Happily we make a very comforting discovery. One of the most common formulae—common, it is true, more in the theory of the subject than in practical index making—is the one usually referred to as the Laspeyres formula. It compares two aggregates: the quantities of the base period times the prices of the current period and the same quantities times the prices of the base period. If we denote any price or quantity of the current period by the subscript i, and any price or quantity of the base period by the subscript o, the formula is $\Sigma p_i q_o / \Sigma p_o q_o$. It is obvious, and has often been pointed out, that this formula imparts an increasing bias the farther away we draw from the base period. But if we have, for example, monthly data, which will in most cases represent "small" intervals, and if we refer each item to its predecessor as its base ("chain-method," first effectively advocated by A. Marshall), then we may put each $p_i = p_o + dp_o$ and get, dropping subscripts:

$$\frac{\Sigma(p + dp)q}{\Sigma pq} = 1 + \frac{\Sigma q dp}{\Sigma pq}$$

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cussed here. Nor is this question relevant for our purpose. But it may be stated that it fulfills all the criteria that retain meaning within this theory.

[1] Objections to the performance of that operation have been raised by many eminent authors. They are but too well founded if they rest on the quality of available indices. They are also well founded if they aim at erroneous conclusions arising from an imperfect understanding of what "deflating" really means. But the operation remains nevertheless, as unavoidable as it is theoretically correct if properly understood. It has been pointed out to the writer, and it may well be true, that the use of the term *price level* for our concept may prove misleading. Mr. R. Bryce has suggested the term *monetary parameter*.

This is our own formula. We could also have followed the suggestion of Paasche and compared the aggregate of expenditure at the current period with the sum which would have been expended at the base period if at the then prevailing prices (p_o) the current quantities (q_1) had been bought. Hence the suggestion of Knut Wicksell (which he, however, based only on the absence of a criterion of choice between the Laspeyres and the Paasche formula), namely, to take the geometric mean between the two (Professor Fisher's Ideal Formula) is, although not quite in accordance with our theory, also acceptable provided, of course, that changes are small.

Finally, there is the question which prices to include. If the price level in our sense is a definite thing, the answer must follow from the theory of that thing. So it does. We ought to include the prices times quantities of all commodities and services actually and directly bought by households, and nothing else. A very simple argument will establish this principle.[1]

The price level in our sense is a measure of a property of the system of economic values. This parameter derives from the relation between the flow of expenditure and the flow of the things bought by it, and thereby defines, in a particular way and for a particular purpose, the significance of the unit of accounting and clearing in terms of commodities and services. Now this flow of expenditure runs, as it were, through several basins or economic spheres. For our present purpose we may reduce these basins or spheres to four: the "markets" of finished consumers' goods, of original means of production (primarily labor), of produced means of production (primarily raw materials and machinery), and of titles to income (primarily shares, bonds, and realty). Expenditure flows through all of these but each element of it confronts, at any one time, not all but only one of them. And there is no meaning to a combination of items from different spheres, or the whole of all the items of different spheres or phases, of the monetary stream. A variation in one direction of a price in the market of consumers' goods is not compensated by an equivalent variation in the other direction of a price in the market of producers' goods. There is, to be sure, plenty of interdependence between the different spheres, and units of potential expenditure can be shifted from one to the other. But this is irrelevant for the arithmetic of the thing. The relevant criterion is substitutability in the technical sense; we must combine, in order to get the proper price-level figure, the prices and quantities of all goods which compete for the sum that actually buys in a given sphere and in a suitable time interval, and nothing else. If we include less, we may get a change

[1] A fuller discussion will be found in the writer's book on money. It is only the principle that interests us at the moment. In practical work, as we cannot hope to include everything, the problem becomes one of sampling, and considerations of probability enter at this stage, although they did not enter into the theory.

which is due to a shift of values between rival commodities. If we include more, we vitiate our result by telescoping different stages or phases of the monetary process into one. This is what sometimes lies at the bottom of the argument, which has, however, another surface meaning, that we must not include wages, except, of course, the wages paid for services directly consumed, because this would involve "double counting." If we include "everything purchasable," we get a meaningless heap.

But the only market which exhausts, and does not more than exhaust, a complete stage or phase of the monetary process and presents the ligamen between money stream and commodity stream, is the market of consumers' goods. The things that form the markets of "original" and of "produced" means of production are substitutable for each other at many stages of the productive and commercial process, and no combination of their prices, therefore, ever displays the changes of our parameter alone. Nor can we take all producers' goods together, because they do not fulfill the condition of facing one, and only one, stage of the stream of expenditure, but are obviously arrayed in successive groups.

In the case of the sphere of titles to income, roughly, the stock exchange and the realty market, there is a special reason for exclusion. They do not form a phase of the fundamental stream of expenditure at all and, as we shall see later on, their pricing process is so different from the pricing processes in the world of commodities and services that, even for the usual aims of investigations into the "value of money" and from the standpoint of the usual theory about the meaning of price indices, inclusion with any significant weight would yield a result incapable of serving any useful purpose.

C. The Practical Question.—It would not be impossible to build an index of the price level in our sense (it could obviously be an index only) from postwar material. Even for the prewar time information is available (stretching in some cases over centuries[1]) that would go far towards

[1] Stray data about prices we have, of course, for practically all periods of recorded history. Data about individual prices, previous to 1780, are sometimes available in long, continuous series; compare, for example, those in Thorold Rogers' or d'Avenel's works and Sir William Beveridge's annual series of Wheat Prices in Western and Central Europe, 1500–1869 (see Weather and Harvest Cycles in the *Economic Journal*, December 1921). See also Professor Usher's article Prices of Wheat and Commodity Price Indices for England, 1259–1930, *Review of Economic Statistics*, August 1931. For this country several pieces of work have been published, notably, Bezanson, Gray, and Hussey, Prices in Colonial Pennsylvania, 1935, G. R. Taylor, Wholesale Commodity Prices at Charleston 1732–1791, *Journal of Economic and Business History* vol. IV; T. S. Berry, Wholesale Commodity Prices in the Ohio Valley, *Review of Economic Statistics* for August 1935; H. M. Stoker, Wholesale Prices at New York City, 1720–1800, *Memorandum* 142, Agricultural Experiment Station, Cornell University; and R. Crandall, Wholesale Commodity Prices in Boston during the Eighteenth Century, *Review of Economic Statistics*, June 1934. Back

giving us an idea, although too crude for microscopic purposes, of the behavior of the level. This task, however, is quite outside the range of the possibilities of the individual worker.

Under these circumstances, we are at present forced to use, and to perform certain operations on, existing price indices, which for a variety of reasons bear but a distant relation to what we wish to study. If we want to cover at least the period from the eighties of the eighteenth century onward, we must sometimes use (although this has been avoided wherever possible) annual and quarterly indices, which cannot give correct contours for the shortest of our cycles or the correct boundaries or *extrema* of the longer ones, besides violating our condition that the intervals must be small. Lack of necessary data about quantities is by itself sufficient to reduce the value of some indices, at some times of all available indices, to a mere indication of the strongest features. In some cases the data themselves and the degrees to which the price quotations used are representative of the prices that really ruled (but often differed widely) in the countries and at the times to which they refer, are open to serious doubt. Changes in qualities very often present insuperable difficulties. In other cases technique is deficient beyond remedy, from whatever standpoint it may be looked at.[1] But the old argument of practical workers that indices tend to give roughly the same picture, however well or faultily constructed, contains after all some little element of truth, which for us,

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to 1630 goes W. B. Weedon, Economic and Social History of New England, 1620–1789, 1891. Of the work done for other countries, Professor E. J. Hamilton's on Spanish and on French prices is the most important. See also A. P. Usher's series (unfortunately not published in full) of French Wheat Prices, 1350–1788 (The General Course of Wheat Prices in France, 1350–1788, *Review of Economic Statistics* for November 1930), and E. B. Schumpeter, English Prices and Government Finance, *Review of Economic Statistics* for February 1938. A long list of contributions could be presented. For the interpretation of such series a detailed history of the currency is, however, indispensable.

[1] On questions of technique and on reliability, as analyzed from the standpoint of statistical criteria, the reader should consult, from the great literature of the subject, at least the standard works of Professor Irving Fischer, The Making of Index Numbers, and Professor Wesley C. Mitchell, Index Numbers of Wholesale Prices in the United States and Foreign Countries, *Bulletin of the U. S. Bureau of Labor Statistics* 173, and The Making and Using of Index Numbers, *Bulletin of the U. S. Bureau of Labor Statistics* 284; also Professor Warren Person's The Construction of Index Numbers, Professor Mills' remarks on the subject in The Behavior of Prices (see, in particular, the instructive graphs on p. 237 and the section on reliability) and the excellent chapter on Index Numbers by the late A. A. Young in Rietz's Handbook of Mathematical Statistics. Any more comprehensive study would have to start from Edgeworth's famous reports, reprinted in his Collected Papers. For England, the Board of Trade Index; for the United States, the Bureau of Labor Index must, as far as the writer has been able to judge, be considered as the best in the usual sense, as well as in the sense that they approximate our price level more than any others. On the latter, see H. B. Arthur, The Development of Wholesale Price Measurement by the Federal Government, *Review of Economic Statistics* for August 1935.

it is believed, suffices to justify what we are going to do with them, provided we watch our step in drawing conclusions.

In one respect there seems to be more reason for confidence than most students of price-index numbers feel, namely, in respect to the use of indices of prices at wholesale in lieu of the retail prices for which our own theory really calls. Owing to the inadequacy of the retail price material before the war, we have no choice but to use wholesale price indices, although what is available of the former has been studied.[1] But there are disadvantages inherent in the use of retail price indices which no critical care or perfection of technique that can reasonably be hoped for in the near future can be expected to overcome. It is certain retail prices that are particularly "sticky" in the short run. Some are very "traditional," and it is here more than anywhere else that change in quality (also quantity) takes the place of change in price. Moreover, it is difficult to discover and appraise changes in the services rendered by retailers to customers and the nature of that composite of ponderable and imponderable elements which is what the household really buys, or to follow up the sometimes tortuous ways of supernormal, normal, and "sale" prices. Not always, but often, retail trade acts as a bottle-neck that prevents the stream of commodities from flowing along its course. All this, however essential for other purposes, is distortion of the true contour lines from our standpoint. Prices of commodities at wholesale, on the other hand, may overdraw the picture, but they at least draw it. There is some truth in Mr. Snyder's saying that they are a picture of "speculation" rather than commercial reality, and they are certainly likely to display peaks and troughs, which do not mean much by themselves either as to amplitude or as to exact location. But that particular kind of "speculation" reflects the opinion of wholesale trade about imminent reality in the short run, and the real tendency of things in the long run, free from many frictions, rigidities, and inertiae. Here, business life does for us a piece of work of abstraction and analysis that could—and for purposes requiring a higher

[1] We are rapidly acquiring valuable series, especially of the cost-of-living type (which, to be sure, is not quite what we want when investigating the changes of the price level in our sense). Most of these are in common use, but there are many others, in particular in some countries not included in this study. Far above everything else, both as to abundance and reliability of material and as to excellence of workmanship, is Professor Gunnar Myrdal's Cost of Living in Sweden, 1830–1930 (Stockholm Economic Studies, 1933). See especially the chart on p. 141, which covers the period from 1830 to 1913. The Canadian Index (R. H. Coats) 1900–1915, some of the material in the English Report of an Enquiry by the Board of Trade into Working-class Rents and Retail Prices · · · in 1912 (Ed. 5,955, 1913), which among other things gives food-price indices 1900 to 1912 for fourteen countries, and, for this country, Mr. Carl Snyder's indices and their constituents have also been very helpful.

degree of accuracy will have to—be done on retail series only by laborious and unsafe methods.

Inasmuch as retail prices are prices of finished products, their relations to the associated wholesale prices will differ according to the conditions and policies of the industry or even of the individual manufacturing (sometimes wholesale) concerns. We find extremely variable patterns very refractory to generalization and ranging from nearly instantaneous (even rigid—where wholesale price is a fixed percentage of retail price) covariation between retail and wholesale prices to what in the short run almost amounts to independence. In the case of foods (if we exclude highly processed and branded types) we presumably come nearer than in any other case to what seems to be the (theoretically) normal state of things—*i.e.*, that the change of retail price should lag behind, and roughly be equal in amount to, the change (per corresponding unit) in wholesale price, either of the object itself or some raw material or semifinished ingredient of it, a rule that, of course, has to be qualified by taking account of stocks and expectations. Obviously, this means a smaller percentage change in the retail price.[1] Actually, covariation between indices of retail and wholesale prices is more in evidence than we have a right to expect. The reader can easily satisfy himself that cyclical variations displayed respectively by wholesale and retail indices do not differ sufficiently to cause serious concern about any of the statements to be illustrated or proved by the former (see, for example, Mr. Carl Snyder's charts for this country and England on pages 390 and 397, *American Economic Review* for September 1934).

D. Analysis of the Behavior of Price-level Series.[2]—This analysis starts by recognizing that they are—to use the terminology introduced in the first and fifth chapters—synthetic, systematic, primary, consequential, and that they display a result trend. We have first to form expectations as to their behavior from the "pure" model, as modified by the qualifications which constitute the further approximations, then to

[1] The above agrees with Professor Bowley's results in Wholesale and Retail Prices of Food, *Economic Journal* for December 1918, which to the writer seems still to be the leading contribution to the subject. Also compare Frances Wood, Construction of Index Numbers to show Changes in the Price of the Principal Articles of Food for the Working Classes, *ibid.*, to which the writer feels much indebted.

[2] The first author to discuss price level in the light of scientific principle was probably W. St. Jevons. But Tooke and Newmarch's history of prices is also a discussion of the factors relevant to variations of the price level. Although marred in many particulars by inadequacy of theoretical equipment and a certain "wooliness," that work is still a mine, not only of material but also of wisdom, and must be ranked very high. Analysis in the light of industrial fact is also the great merit of W. Layton's Introduction to the Study of Prices (1st ed., 1912; 2d ed., 1935).

look at our material and compare, and finally to see whether discrepancies can be satisfactorily accounted for by external factors[1] or by defects of our material. Since these factors and defects are obviously important at all times and dominant at some, and since, moreover, our process is "internally irregular," it would be quite unreasonable to formulate our task in any other way. We must from the outset be prepared for considerable discrepancies, and all we can hope to find is traces of our process. This is why the writer feels unable to attach much weight to exact timing, particularly to lead or lag of variations in price level as compared with other elements of the cyclical process. They would have to be very consistent or very considerable to be of real significance in the circumstances under which it is the economist's lot to work.

Expectations from the pure model are so definite as to make it superfluous to elaborate them beyond what has been said in Chap. IV. Price level should rise in prosperity—under the pressure of credit creation, which, under the conditions embodied in the pure model, would not be compensated either by an increase in output or by any fall in "velocity" —and fall in the downgrade—under the pressure of autodeflation and of increase in output—*more than it had risen in the preceding prosperity.* We also know that introduction of additional facts by means of successive approximations does, indeed, tone down, but does not reverse, these expectations. Existence of unemployed resources in the neighborhood of equilibrium is one of these facts. But the most important difference made by the second approximation—the substitution for the two-phase of a four-phase cycle—adds the expectation that the price level will go on falling in depression and that this fall should be corrected in recovery. This does not mean, however, that recovery will carry the price level exactly to the figure at which it stood in the neighborhood of incipient

[1] The writer has not been able to go into international relations—which, from the standpoint of each individual country, constitute external factors— to the extent required. In the matter of price levels this lacuna is particularly serious. For many indices (the Sauerbeck and the Soetbeer indices are outstanding examples; only Dr. Necco's Italian index is still worse) covariation is tautological, because they are dominated by the great articles of world trade. But those articles exert their influence on any index and while, from one standpoint, this is as it should be, seeing that price levels are among the most important conductors of cyclical effects, from another standpoint it reduces their value as cyclical symptoms still further. It also invests them with a causal significance that they do not otherwise have. The extent to which levels have moved in step in our three countries is best realized by inspecting the chart displaying rates of change, although some readers will find the differences in behavior still more interesting. International comparison meets, however, with all but insuperable difficulties. Professor Bowley's work in this field (London and Cambridge Economic Service) should be mentioned. Finally, the writer has never been able to do much with the concept of a world's price level. Mention is due, however, to the work of Professor W. Gehlhoff, Die allgemeine Preisbewegung, 1890–1913, vol. 149, Part 1 of the Schriften des Vereins für Sozialpolitik.

depression. Even depression may, but recovery always does, continue the work of recession by increasing output. In longer cycles also growth asserts itself. Hence the equilibrium level that will be reached by the detour of depression and revival, will in general be lower than the level that obtained immediately before the system embarked upon it. It should also be observed that, depression being essentially erratic, it is in each case a question of fact how much there is for recovery to correct.

In the long swing of the Kondratieff, in particular, short-run fluctuations such as are caused by panics and spirals play so small a role that there is not the same reason to expect a rise in price level—at least in its absolute values as distinguished from rates of change—during a Kondratieff recovery as there is to expect it for the recovery phases of the shorter cycles. The third approximation, which introduced the three-cycle schema, affects expectations because of the phenomena of interference that henceforth complicate the picture. Any given phase of any given cycle then comes under the influence of the simultaneous phases of the others and may be entirely blotted out or even reversed by them. It is important to bear this in mind. For while some economists, particularly those who hold monetary theories of the cycle, may think our expectations too obvious to be worth stating, others deny that they are borne out by facts. And the instances to which these may point are mostly—though not all of them—attributable to the neglect of Kondratieff effects.[1]

Charts IV, V, VI, and VII are presented in order to show how far facts conform to those expectations. Chart IV displays the rates of change of price level in our three countries, similarities between which are as interesting as are the differences. On the other three charts the reader finds the graphs (on a logarithmic scale) of the price levels—the indices of wholesale prices—themselves, together with the graphs of indices of output, of what we take to represent the circulating medium, and of certain rates of interest, which will be discussed in the chapters that are to follow. In the workshop of the writer a habit has grown up of referring to these charts as Pulse Charts. The reason for this is obvious. Little though the writer thinks of the explanatory value of aggregative theory, and far though he is from claiming barometric value for the four constituents of these charts, they nevertheless give a rough picture of the economic process in time and, in a sense, sum up what we have to account for by our analysis. Also the picture is, as far as it goes, complete: none of the four constituent curves could be left out, but no other is logically

[1] The above refers only to denial of the *association* of rising prices with upgrades and of falling prices with downgrades. If those authors only mean to discount the causal role of the price level, we are, of course, largely in sympathy with them.

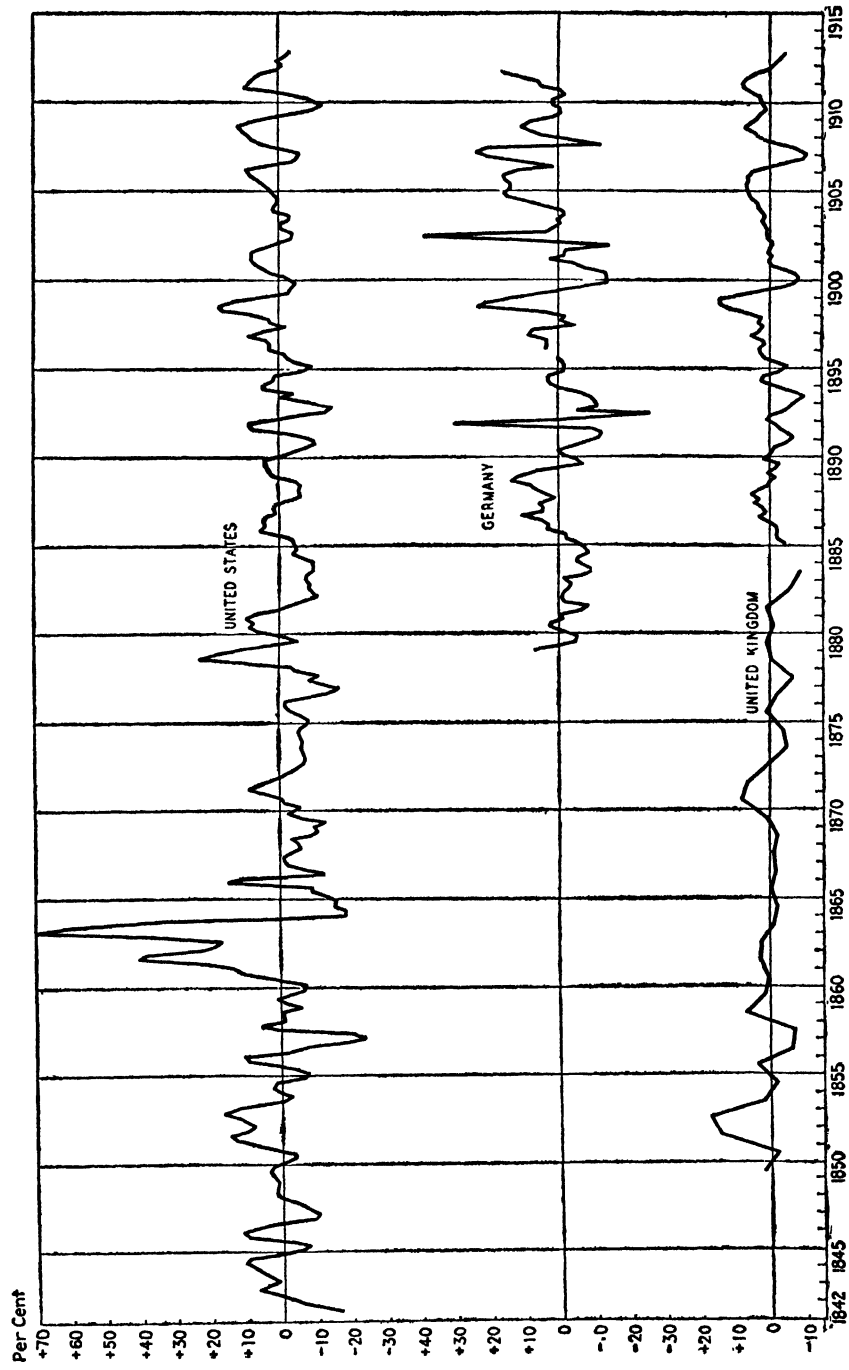


CHART IV.—Rate of percentage change of price levels (see Appendix, p. 1052).

necessary in order to convey what meaning there is in the variations of aggregates at all. If the writer had to construct an index of business conditions, this is what he would offer.

Naturally, we shall first look for the result trend which our analysis leads us to expect. For since in the downgrades of all cycles the price level must, barring interference by opposite phases of other cycles, fall more than it rises in their upgrades, capitalist evolution produces a long-run (or "secular") tendency of prices to fall. This downward result

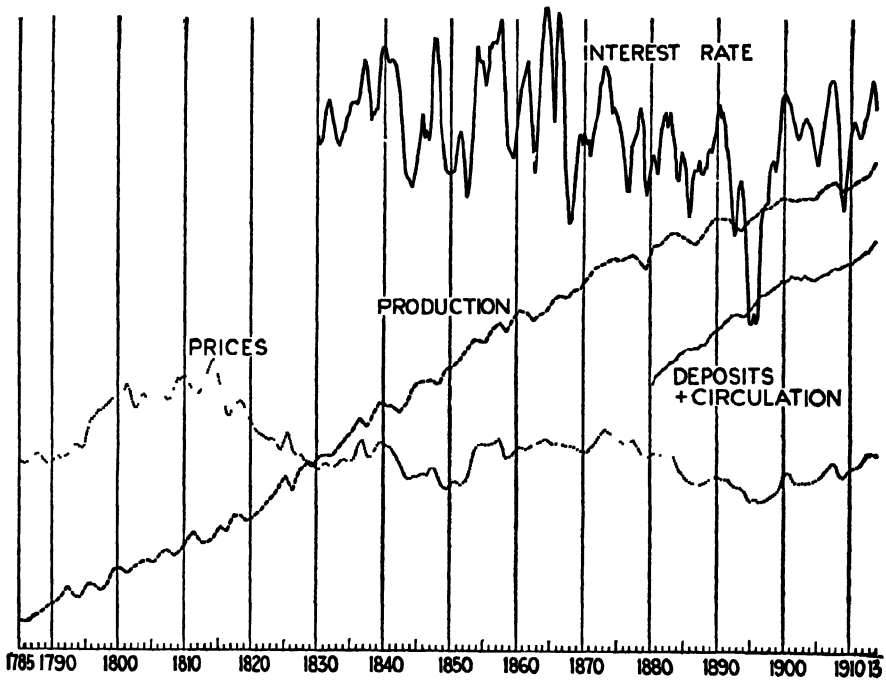


CHART V.—British prewar "pulse" (see Appendix, p. 1052).

trend embodies the method by which the capitalist mechanism diffuses the fruits of industrial improvement over the masses of the people, and characterizes the specifically capitalist "road to plenty." It is an illogical method, no doubt, which records increase in real income in a way that may be likened to measuring the growth of a child by leaving the number of inches constant and increasing the size of the inches instead. And other methods of social accounting could be devised which might achieve the same results without each time creating the danger of the system's sliding off into depression. Experience tends to show, however, that neither capitalism itself nor the social institutions asso-

ciated with it, democracy among them, can work efficiently and with comparative smoothness except on a falling trend in prices.[1]

The price-level curves in charts V, VI, and VII display, in fact, a falling descriptive trend.[2] But although this descriptive trend is what

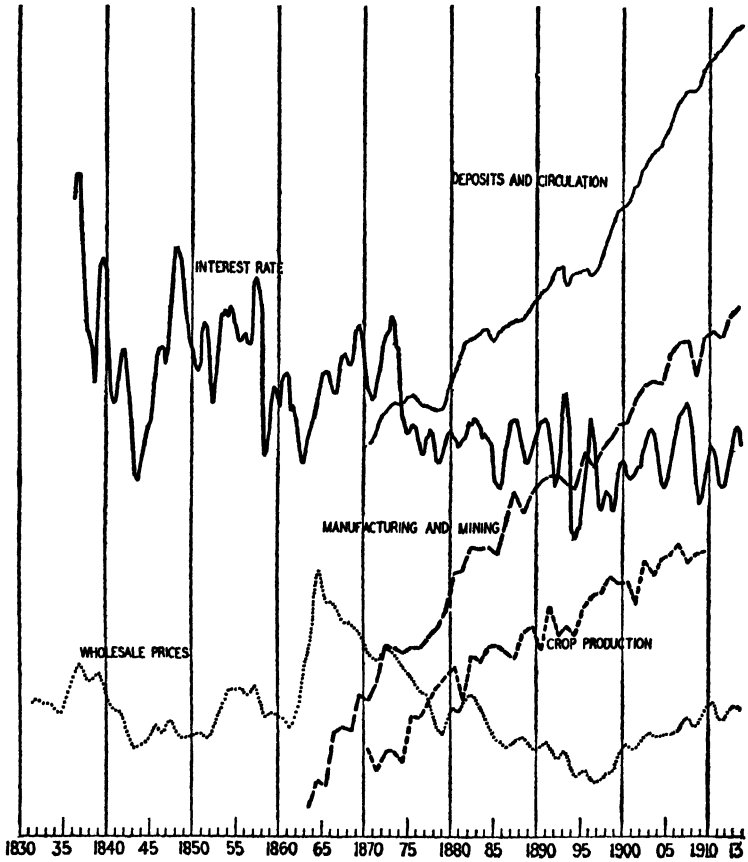


CHART VI.—United States prewar "pulse" (see Appendix, p. 1053).

is left in our figures of the result trend, the former does not of course render the latter. The two differ by the effects of external factors.

[1] That statement rests on the opinion that all alternatives that are politically feasible carry with them other effects which in one way or another tend to upset the working of the system. It should again be remembered, however, that what has been said does not apply to the fall of prices in depression.

[2] In retail prices, particularly if we include rent, it is much less pronounced. But no index, however constructed, has, as far as the writer knows, succeeded in effacing or reversing it. It is of course quite incorrect to include wages.

Government deflations have never gone far enough to counter-balance the corresponding government inflations, which in our countries and period have been mainly, though not exclusively, those of the Napoleonic time and of the American Civil War. Demonetization of silver, on the one hand, and the impact of Australian, Californian, and South African gold discoveries, on the other, must have exerted some influence. The spread of deposit banking acted in the same direction as the gold discoveries. Protectionism and immigration of capital also have, in some cases, been responsible for rising prices, or have prevented a fall that would have occurred otherwise. Theoretically the descriptive trend of the sum total of money incomes should measure the net influence of all

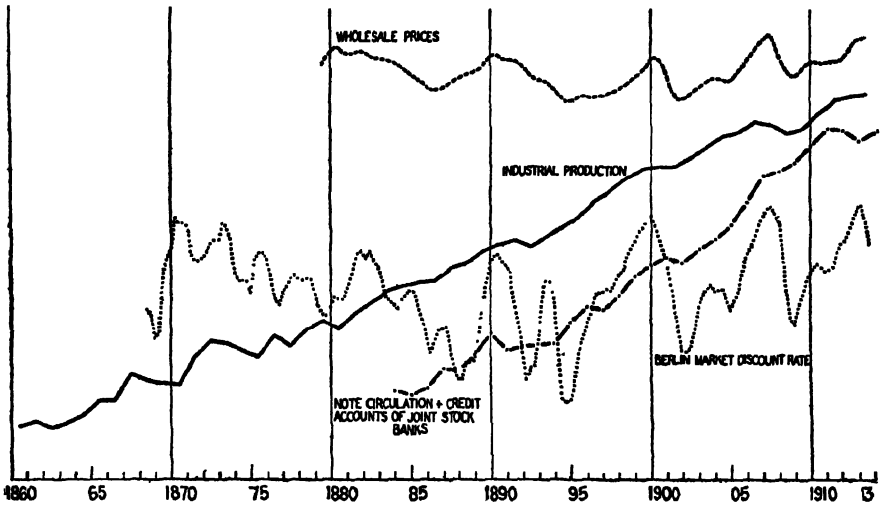


CHART VII.—German prewar "pulse" (see Appendix, p. 1054).

these external factors. Unfortunately, however, the evolutionary process itself tends to bring about not only the recurrent expansions and contractions of deposits that are described by our pure model, but also those lasting expansions which we took into account in our successive approximations and in consequence of which money incomes will display a long-time tendency to increase. Hence, these expansions become part of our process, and the method alluded to, therefore, cannot be expected to serve as a means of separating the result trend from the effects of other factors. Moreover, there are other reasons for this. Structural changes in habits of payment are also induced by our process itself. Increase in the supply of monetary gold cannot be considered as a wholly independent factor. Government inflations and deflations and the policies of which they are elements have many effects on the economic organism besides

influencing incomes. A very interesting research program suggests itself here. It is, however, safe to say that, for our countries at least, the net effect of external factors has been to counteract and not to intensify the influence of the result trend.

It stands to reason that external factors affect not only the result trend but also the cyclical behavior of price-level series. Moreover, the facts that our figures do not express at all accurately the level of prices in our sense and that they even do not measure correctly what they could be expected to measure are likely to make themselves felt still more in the case of cycles than they do in the case of the secular tendency. Finally, there is always so much "slack" and underemployment in the

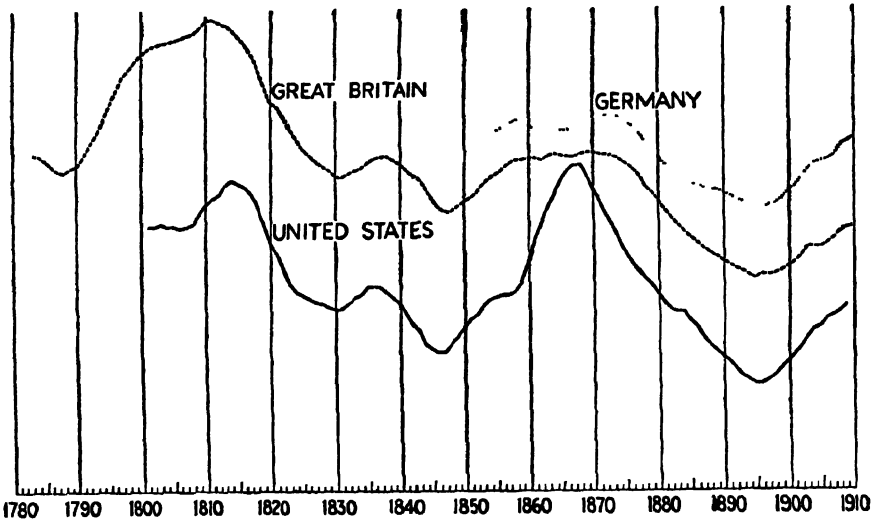


CHART VIII.—Nine year moving averages of price indices (see Appendix p. 1054).

system and so much room for the play of a multitude of factors that the effects on the price level of each cyclical phase may be slow to emerge and can easily be drowned in the effects of the succeeding one. It should be equally clear that this does not invalidate our analysis.

In the case of the Kondratieff, some readers might think it a waste of space to prove the existence of those protracted periods of rising and of falling prices which stand out clearly enough and are seen at first glance to correspond roughly with the upgrades and downgrades of that long wave. In fact, all we need to do in order to prove this is to look at the pulse charts or to take a nine-year moving average of American, British, and German indices of prices at wholesale (see Chart VIII). It cannot be too often repeated, however, that mere shifts in the price *system*,

though they do not per se influence our price level, do influence the indices we have. Hence individual prices may, besides their legitimate influence, acquire an illegitimate one as well.

We see fairly smooth wavelike lines that display two units of about equal length and the beginning of a third. Chart IX, which gives the variations of American wholesale prices treated by a simplified freehand adaptation of Professor Frisch's method, discussed in Chap. V, presents a similar picture. Recalling the testimony of industrial history, we shall associate the first unit with the processes usually referred to as the industrial revolution. But the height and location of the maxima, being

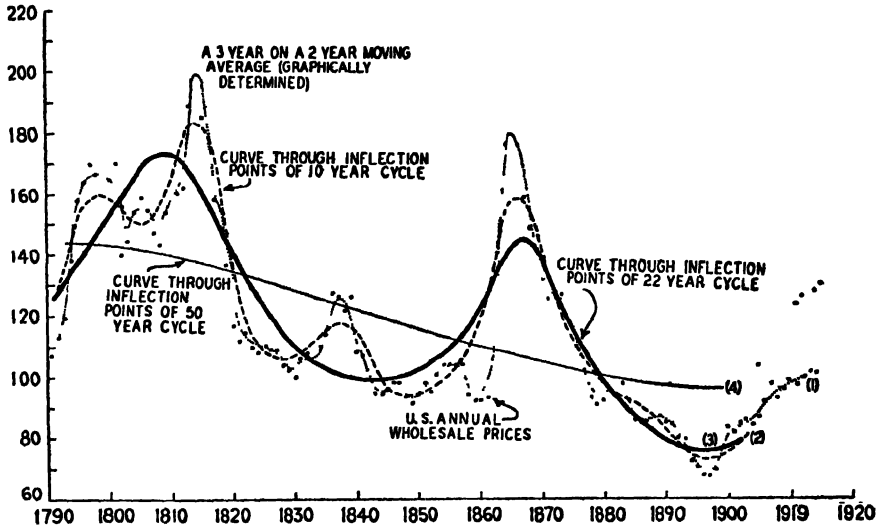


CHART IX.—(See Appendix p. 1054.)

obviously conditioned by the Napoleonic Wars, prove nothing. The English maximum (Silberling index) occurs in 1814,[1] after which "deflation" due to normalization of government finance, superimposing itself on

[1] Mrs. Gilboy (*Review of Economic Statistics*, 1936) gives 1813, but since she uses harvest years, there is really no difference. Like Jevons before us, we should have expected the maximum to occur earlier, the more so because English war finance, with relapses, grew steadily sounder after the turn of the century, though Mr. Silberling's figures do not quite agree with this. Dr. E. B. Schumpeter (*Review of Economic Statistics*, Feb. 1938) in fact established that prices of domestic commodities fell from 1800, which would agree well with our cyclical schema. It must be remembered, however, that the influx of precious metals from Spanish South America, which before the wars of the French Revolution was over 7 million pounds per year, began to fall later on. It was about 5 millions in 1825 and only 4 millions in 1829.

the autodeflation we should theoretically expect, possibly blurs the picture for about half a dozen years. We cannot eliminate this disturbance by using gold instead of paper prices, for gold prices also are influenced by inflation and deflation and by the events of which inflation and deflation are but the monetary garb. The failure of our figures for price level to rise in the eighties of the eighteenth century may, in the case of England, be due to imperfections of our material. New evidence of increase in prices of many important commodities points in that direction. In America, the beginning of the Kondratieff is, as we have seen, doubtful, owing to the Revolution and its aftermath.[1]

The third and smaller hump that we observe in the chart of nine-years moving averages presents more delicate problems. The occurrence of such a fluctuation is not astonishing in itself and proves nothing against the three-cycle schema, because it may be but an effect of superposition (see Chart I and the top curve in Professor Fisher's chart in Business Cycles as Facts or Tendencies, p. 6, in the volume in honor of Professor C. A. Verrijn Stuart). But the amplitude is unexpectedly great for a Juglar belonging to the recovery phase of a Kondratieff. Moreover, price levels continued to fall far into the forties, according to some indices much beyond our date for the rise of the prosperity of the second Kondratieff. We have met the same difficulty in our historical discussion.[2] Of course, it may mean no more than that our schema is faultily designed. This may well be so. But, as stated in Chap. VI, the writer feels inclined to believe that "reckless" banking practice, which undoubtedly was an outstanding feature of the thirties in both America and England, intensified the prosperity phase of the last Juglar of that Kondratieff and induced a wave of speculation of unusual violence which, in turn, accounts for the depression of unusual severity, and for underemployment at the beginning of the second Kondratieff. This explanation seems particularly plausible in its application to the price level, while political troubles

[1] Mr. H. M. Stoker speaks of a postwar depression that lasted for eight years (*Memorandum* 142, Cornell Agricultural Experiment Station, 1932, p. 204). This hardly accords with historical evidence (see Professor W. B. Smith's comments in Smith and Cole, Fluctuations in American Business, 1790–1860, 1935, p. 12). But it is true that existing figures do not indicate a rise in price level before 1792. Miss Crandall's "special" index of Boston prices does rise from 1788, but it consists only of molasses, rum, and fish. The situation was, as we have seen, prosperous in 1790, and became violently booming immediately afterward (see Chap. VI, Sec. D). The Hamilton policy, though favorable to prosperity, was not favorable to an increase in prices. Also, the virgin environment offered plenty of underemployed resources.

[2] Therefore, Kondratieff himself dated the second long wave from 1849. Our view is, however, supported by the authority of Spiethoff, who has an *Aufschwungsspanne* 1842–1873 on the criterion, perfectly valid from our standpoint, that years of prosperity (he counts 21) predominate over years of depression (10).

would, as has been pointed out by Sauerbeck himself (*Journal of the Royal Statistical Society*, 1886, p. 648[1]), no less plausibly account for the further fall, 1848 to 1851, which is, however, perfectly regular within the course of the Juglar. Moreover, in England, where the fall of the price level is most obvious, introduction of free trade must have had some effect on prices, and Peel's Act may have exerted some restrictive effects on credit creation, as in fact it was intended to have. If there is anything in this, we must conclude that we have simply a case of a primary cyclical element failing to behave according to expectation because of a combination of counteracting circumstances. That this did not prevent a prosperity phase in our sense from starting and running its course is clear in any case: the English railway mania testifies to that with no uncertain voice.

The behavior of certain indices seems to lend some support to this interpretation. In Germany, where the hump of the thirties, though not absent, is much less in evidence than in England and America, prices began to rise in 1845 (see the Berlin Institut's new index). In France there was a sharp upturn of the price level, at least from the beginning of 1844, possibly from the end of 1843. For the United States, Professor Cole's 38-commodity index (*Review of Economic Statistics* for April 1926; 1834-1842 = 100) gives a maximum for 1836 (130) and a minimum for 1842 (72), after which a rise set in that lasted up to the point where we locate the turn of that Juglar (1847). Professors Warren and Pearson's all-commodity index reaches its trough in 1843 and then begins to rise. So do their indices of metal and metal products and of building material. It does not seem unreasonable to describe this as a tendency toward increase, dwarfed by the circumstances referred to above.

Recalling what has been said on the subject in Chap. VII, we find that in all three countries (also in France, according to the index of the Statistique Générale de France) a peak occurs in the middle of the fifties that may be identified as a perfectly regular Kondratieff turning point

Dates of Minimum for Sauerbeck Group Indexes

All commodities	1849, 1851 (equal)
Total materials	1848, 1849 (equal)
Food	1851
Corn, etc.	1851
Animal foods	1850
Sugar, coffee, tea	1848
Minerals	1851
Textiles	1848
Sundry materials	1849

[1] See *Journal of the Royal Statistical Society*, 1886, p. 648. Ten-year moving average touches its minimum in 1848. However, the Sauerbeck index is no ideal guide.

But the fall, which we should then expect to continue, with interruptions due to the prosperities of the shorter cycles, for at least the whole of the Kondratieff recession and depression phases, was everywhere, except in France, checked about 1858. To about 1863 the Juglar recovery and prosperity account for that, when the German price level in fact begins to fall. That turning point occurs in England one year later, and in the United States (if we take gold prices) two years later. This and the violence—not the fact—of the rise in prices, which in England and Germany occurred from 1870 to 1873—both gold and currency prices moved up but moderately in this country in 1871 and the first half of 1872—afford the only occasion for invoking the influence of gold production in explanation of movements contrary to expectation, although on others that influence may have intensified tendencies independently induced by different factors. We shall understand, however, that economists who put their trust in the formal properties of a graph will look upon the whole segment from about 1849 to 1873 as a long-time upgrade. But since we can easily account for that peak—which, to repeat, is irregular in nothing but height—and since the reaction was so prompt and so severe, the thesis that the underlying tendency was downward from the middle fifties is perhaps not indefensible. If so, the consequence that follows for the value of formal methods of analysis is truly discouraging. Price levels then continued to fall, not only through the depression but also through the recovery of the Kondratieff, though for all our countries it is possible to speak of a fall at a decreasing rate, which in the case of Germany almost vanishes by 1886. Thus Kondratieff recovery again failed to bring about a recovery in prices. The reasons have been mentioned at the beginning of this section. The rise of the third Kondratieff is clearly marked and particularly normal in this country (1897).

We may sum up by saying that the great waves of economic change recorded by history show in the behavior of the price level, but that the association is so imperfect as to make it highly unreliable for purposes of diagnosis or prognosis. Since existence and adequacy of the disturbances that we hold responsible for that imperfection can in each case be established from independent historical evidence, the fact should not be recorded against our model. Among them, monetary disorders, which in particular account for the outstanding peaks, are by far the most important. But again the question whether we have done justice to the gold factor crosses our way. The problem of its possible role in the causation of *business cycles* having been dealt with in Chap. IV, Sec. E and Chap. VI, Sec. C, it remains to touch upon the problem of its causal importance for the *price level.*

Professor Gustaf Cassel, whose advocacy of the time-honored view that the price level is dominated by gold production in relation to output

or, more generally, economic activity[1] has been instrumental in starting the discussion anew, compared world stock of gold for 1850 and 1910, in which years the Sauerbeck index stood at approximately the same figure, concluded that the average increase in gold stocks between those years (2.8 per cent) was "normal" in the sense that it was sufficient to keep the price level constant, and compared variations of the ratio of the actual to the normal quantity of gold with the variations in price level that had occurred, extrapolating to 1800. Mr. Joseph Kitchins corrected figures, took account of Indian, Chinese, and Egyptian hoarding, restricted gold stocks to monetary gold stocks, and arrived at 3.1 per cent as the normal yearly increment. Fit was greatly improved and the obviously desirable precedence of variations in that ratio, as against variations in price level, was not wanting. Even so, the method not unnaturally met with adverse criticism.[2] Besides, it might be urged that the growth of deposit banking must have alleviated the "scarcity" of gold after 1873 and extension of the area of the gold standard, the plethora of gold after 1896. Much further research will have to be done before we can speak with confidence on these matters; but for our purpose we need not go into them. We will grant for argument's sake more than we believe should be granted and accept as it stands the evidence offered for the effects of gold on price level. It does not follow that the Kondratieff wave in price level is simply due to the variations in gold production. On the contrary, it is clear—since according to that theory price level is the result of variation of monetary gold stocks (which, let us note in passing, are still more a function of business situations than total gold stocks) and output of commodities, and since variation in the latter result, in turn, from the working of our process—that whatever the behavior of gold, unless it should happen to be exactly compensatory, the finger prints of the Kondratieff must show on price-level graphs, although more or less blurred by gold production.

[1] Having already presented his method before the war, he substantially repeated his argument in the League of Nations *Rapport Provisoire de la Délégation de l'Or du Comité Financier, annexe X.* Mr. J. Kitchin's work on the subject was also done for the same *délégation.*

[2] The reader finds an exposition and defence of the method in W. Woytinsky, Internationale Hebung der Preise als Ausweg aus der Krise, 1931, and a good presentation of the case against it in Mr. J. T. Phinney's article Gold Production and the Price Level. The Cassel 3% Estimate, *Quarterly Journal of Economics*, 1933. See also Mr. Tucker's paper on Gold and Prices, *Review of Economic Statistics*, 1934. Fit is even better than the sponsors of the method claim, for they fail to take account of the important role silver played in the first half of the century where, over the interpolated range, the fit is less satisfactory. Overlooking this, Mr. Woytinsky tries to improve the fit by assuming a smaller rate of progress during that time, in order to pull down the curve of the ratio between actual and normal gold supply until it goes through the curve of the price level. But there is as little necessity for this "correction" as there is warrant for it.

In spite of all the objections that may justly be raised against the use of moving averages, we will take the deviations from our nine-year moving averages in order to get some idea of the Juglars. Chart X exhibits the result. Although with characteristic differences in amplitude, they seem to the writer to stand out rather well for all three countries. There are, in England and the United States (but we may with practical certainty assert the same thing for Germany), six of them to the only complete Kondratieff covered by the chart. The reader should mark them off and form an opinion about the question how far there would be any sense

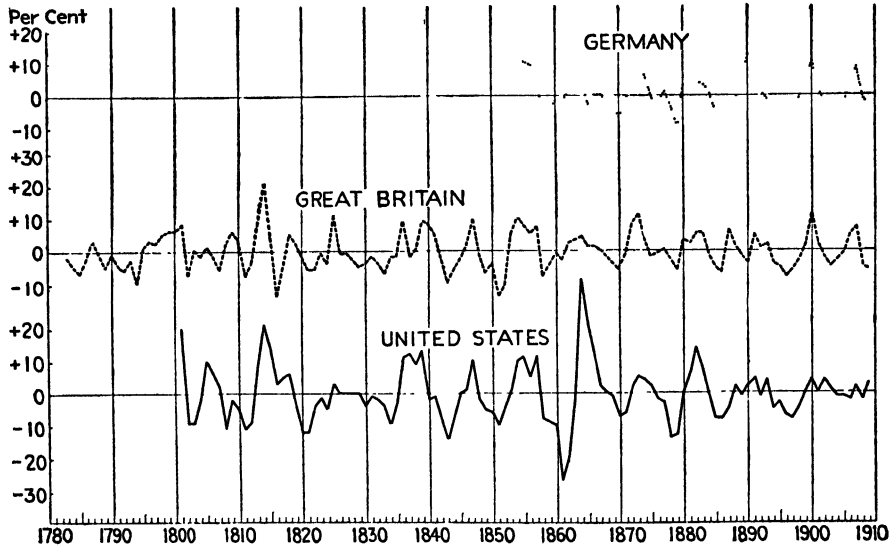


CHART X.—Percentage deviations of price indices from their nine year moving averages (see Appendix p. 1055).

in trying to measure average amplitudes—bearing in mind the Kondratieff phases from which they rise and to which they have, in each case, to fall—and to base conclusions on such averages. In passing, we will advert to Mr. Philip Wright's experiment (Moore's Economic Cycles, *Quarterly Journal of Economics*, 1914–1915, p. 635), which consisted in correlating successive items. Correlation was found to be highest for items distant from each other by 9 or 10 years. The coefficients are low—.40 for 9 years and .35 for 10 years—and the procedure is otherwise open to criticism. But the result accords well with our findings. Also, it should be observed that some of the objections to applying correlation analysis to time series do not hold in this case. Professor E. B. Wilson's periodogram of prices shows only an unsatisfactory hump for a 109-month

period, but it may be significant that other humps also occur at periods of about twice and three times that length.[1]

Charts X and IV may be consulted in order to get an impression of the Kitchins. No doubt is possible as to the presence of shorter fluctuations within the Juglars. It seems fairly clear also that there are about three of them to each Juglar. They are highly irregular in amplitude, sometimes showing by a mere kink in the curve. This can however always be explained by the influence of underlying cycles, which—as mentioned above—may go so far as to iron them out. Their period is less irregular and does not stray far from the average.

E. Group Prices.—An index of a family of prices differs, *toto caelo*, from what we have been discussing in the preceding sections. There is no objection of course to calling it a *level*, but it is not a parameter characteristic of the system as such or of the *monetary ligamen*. On the one hand it is no "real thing" existing irrespective of the doings of statisticians: it owes its existence, not only its presentation, to them. On the other hand, it remains a price, subject (if the group is not too big[2]) to the ordinary logic of prices, and should simply be called a composite price or a composite price relative, as the case may be. In the most favorable instances the matter involves no other problems than are always implied in speaking of "the" price of a not perfectly homogeneous commodity or, say, the composite price of finished steel. In other instances the object is to combine commodities the prices of which display some feature common to all of them, without attempting to find anything that will bear interpretation as a composite price; we shall look upon indices of group prices in this light.

One type of case may be instanced by the familiar indices of prices of textiles, metals and metal products or, if the relationship is on the side of demand, by indices of prices of building materials. Another type consists of groups such as the group of Sensitive Prices,[3] so well known to students of forecasting in this country and in Germany. This is merely an assemblage of prices empirically found to fluctuate more

[1] The periods of the Juglars do not seem to be affected by the Kondratieff phases; but duration of the Juglar *phases* may be, *i.e.*, prosperities may be not only more marked but also longer in Kondratieff prosperities, than in Kondratieff downgrades. This is what has been observed by Professor Spiethoff. The writer prefers to say that in the former cases recessions look more like prosperities and in the latter, more like depressions, and not to stress difference in duration. But this is little more than a different way of expressing the same thing.

[2] If it is too big, the Marshallian supply-and-demand apparatus loses its meaning. We may still speak of a composite price, but only the roughest of popular meanings attaches then to the concepts of supply and demand, and they will no longer bear modern refinements.

[3] See, for instance, Professor W. M. Persons' index in Forecasting Business Cycles, p. 93, *et seq.*, also the index of the Institut für Konjunkturforschung.

violently than others. It serves a useful purpose, but since for us the wholesale price index is quite sensitive enough, we may dismiss this group with the remark that its divergence from the general index gives what so far has been the relatively most successful measure of cyclical variation of price dispersion. Price indices of durable and transient, of domestic and foreign, of monopolized and not monopolized, of raw and processed, of basic and other commodities, of foods and nonfoods, are instances of the application of what may fairly be called a distinct method of analysis. Regional group prices are really levels. Then there is the great division between producers' and consumers' goods prices, which comes near to defining entire spheres of the monetary process, provided we look on both the producers' and the consumers' goods prices included as random samples.

Finally, we might combine, with suitable weights, an index of prices of raw materials with, first, a composite of an index of prices of equipment and of building costs, and second, an index of wage rates corrected for changes in product per man-hour. Thus we could get an index of costs and compare it with an index of prices of finished products. But unless considerable means were invested in this project, results would be exposed to such serious errors that we could not trust them beyond what we may in any case infer from indices of prices of raw materials, wages, and so on, taken separately.[1] More progress has been made, since the war at least, in the construction of indices of the prices of wage goods—the cost-of-living indices.

Suitably chosen group prices might be expected to show, in the course of the cycle, characteristic variations relatively to each other. So they

[1] The problem is different, of course, according to whether it is desired to build a "social" index of cost of production (or cost of doing business in general) or whether the goal is the more modest one of deriving an index of costs for a given industry or, still more modestly, a given concern. Professor Mills' investigations on cost in his Economic Tendencies in the United States, the cost indices of the late G. T. Jones (Increasing Returns, posthumously published, 1933), and also Professor Mitchell's pioneer work in his great book of 1913 must be mentioned. The theoretical bases for further advance have, it seems to the writer, been laid in Professor Leontief's Studies on the Elasticity of Supply (*Weltwirtschaftliches Archiv* for January 1932), which paper also presents interesting applications to the iron and steel industry of the United States. An example of an index of cost for one concern is given in K. Ehrke: Uebererzeugung in der Zementindustrie, 1858–1913 (1933; the method is Dr. Schneider's). Cost investigations, of course, abound since the war; but they rarely cover more than a few years. Construction costs are a particularly bright spot. See, for example, the index of the Federal Reserve Bank of New York and that of the American Appraisal Company. Compare L. J. Chawner, Construction Cost Indexes as Influenced by Technological Change and other Factors, *Journal of the American Statistical Association* for 1935, particularly, Chart V on p. 57, and W. D. Conklin, Building Costs in the Business Cycle. These studies are mentioned here, although they deal almost exclusively with war and postwar material, because some of the questions of principle involved can hardly be dealt with on prewar material.

do, of course. These variations can be brought out by dividing all of them by the index of the general price level[1] and can be used for the purpose of measuring certain types of cyclical price dispersions and disequilibria. They are of considerable importance for the higher approximations of a more refined analysis and for any quantitatively exact picture of cyclical situations. But if we look at Chart XI, which is sufficient to illustrate the one point we wish to make and which the reader can easily supplement by other such graphs familiar to everyone, it is not that aspect which strikes us first. What stands out is, on the contrary, the covariation: compared with it, all there is of difference in form, amplitude, and period, and of lag is distinctly secondary.[2] Let us pause for a moment to consider that broad truth which, though *only* broadly, yet asserts itself consistently.

From our analysis of the cyclical process of evolution it follows, indeed, that cycles are not satisfactorily described as aggregative movements that leave structural relations within the system untouched. It is of the very essence of that process that it remodels the structure of the system. But it does not follow that comparison of the cyclical behavior of group prices must show this. We will divide all the groupings of prices that have been mentioned above into three classes. To the first we assign those group prices the constituents of which are related by virtue of affinity between the commodities—like group prices of textiles, electrical apparatus, and so on. To the second belong group prices formed from prices of commodities that have in common some characteristic of organization or marketing; prices in large-scale industries or monopolized industries afford examples. Into the third we put group prices built from constituents which dwell in distinct "stages" of the economic process—producers' and consumers' goods being a typical example.

Now, we shall expect that, both within the shorter cycles and in the long run, group prices of the first class will behave differently according

[1] This has been done very often, particularly in order to express variations in the "purchasing power" of the products of agriculture (the German word *Agrarschere* has no good English equivalent), see, for example, Kondratieff, Die Preisdynamik der industriellen und der landwirtschaftlichen Waren, *Archiv fur Sozialwissenschaft*, vol. 60. Mr. Carl Snyder made extensive use of that device in his papers on the Structure and Inertia of Prices (*American Economic Review* for June 1934) and on Commodity Prices versus the General Price Level (*ibid.*, September 1934). In the facts and in some results the writer entirely agrees with him. The above may even be considered as an interpretation of some of his findings. However, the obvious dangers of the method, particularly when applied to groups, should not be overlooked.

[2] This would be different if, following some students, we took the price of shares (as represented, say, by the *A*-curve of the Harvard Barometer) to mean price of real capital. But to the writer this seems entirely inadmissible.

to whether or not they are dominated by prices of industries that happen, in each interval of time, to be innovating. There are indeed many qualifications to this. New commodities lack, at their start, a standard of comparison by which to characterize their relative behavior. As far

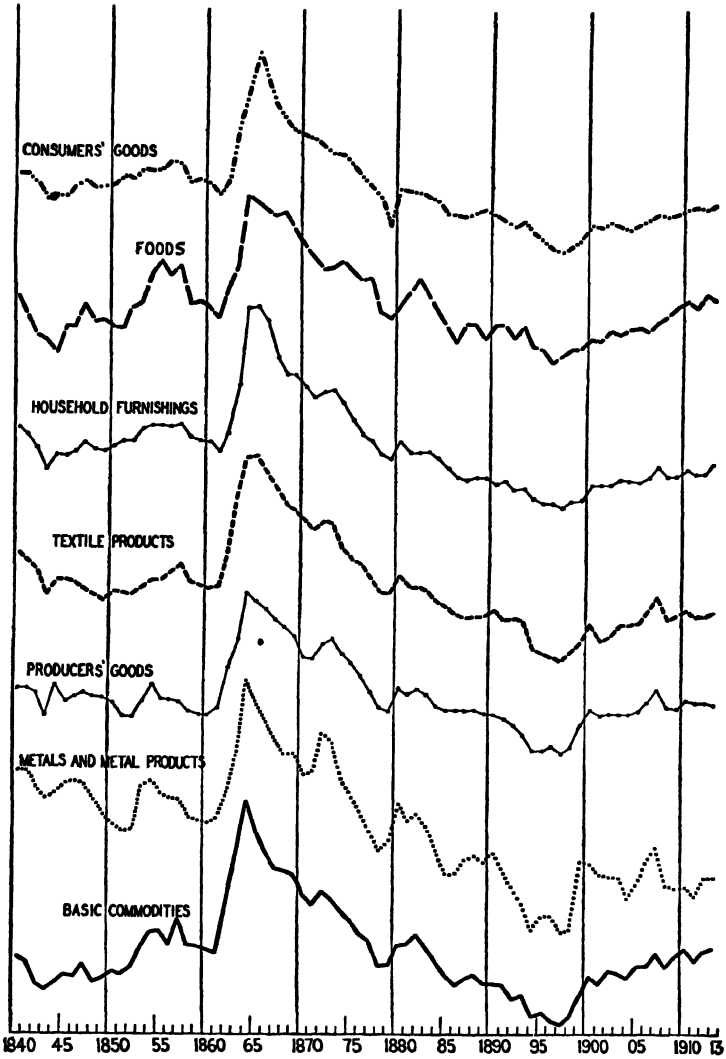


CHART XI.—United States group prices (see Appendix p. 1055).

as innovations occur in highly finished goods, the price variations easily escape record, both for statistical reasons and because such innovations often result in the offering of better qualities for the same price. Even where innovation does influence quoted price, the effect may to a large

extent be lost by grouping. Moreover, innovation in most cases also acts on other prices as well as on the prices of the innovating industry, and entrepreneurial activity shifts from one industry to another, so that we must look for its[1] influence—particularly its long-run influence —to the price level rather than to group prices, which for those reasons will tend to "catch up" with each other. But we may still expect innovation to show and so it does. If the reader inspect Mr. Snyder's charts (in the first of the two papers quoted in our footnote, pp. 189 and 190) he will not find it difficult to associate the behavior of the group prices of chemicals and metals or (in the late seventies and eighties) of fuel and lighting with innovation, or the behavior of the group prices of building materials and of hides and leather with (comparatively speaking) the absence of it. Much more striking instances (textiles at the beginning of the nineteenth century, power at the beginning of the twentieth, for example) could easily be given. The group price for farm products, far from contradicting the principle, really strengthens the evidence for it. There was plenty of innovation, both in the production and in the transportation of farm products, but since both opened European markets for American exports, it is in perfect accordance with our point of view as well as with general theory that this group price did not fall much in the United States. In England it fell. In Germany it did not, but this of course is due to the protection to agriculture which set in at the end of the seventies.

The cyclical behavior of group prices of the second class is conditioned by the cyclical effect of the properties that the constituents of each group have in common. Monopolistic pricing is an example for such properties and illustrates the proposition that they primarily influence the response to the impact of the active elements of the cyclical process (see Chap. X).

But in group prices of the third class we shall expect fundamental covariation. Although entrepreneurial activity impinges on particular spots in the system, the effects of the increase in producers' expenditure in prosperity and of the decrease of it, in amount or rate, toward the end of prosperity and in recession, will make themselves felt very quickly all over the system. Increasing wages, in particular, are promptly spent in prosperity (qualifications of secondary, if yet considerable, importance will be noticed at a later stage) and under the influence of optimistic expectation (greased in many cases by ready availability of consumers' credit) expenditure may even outrun actual receipts, as pessimistic expectation may cause consumers' expenditure to decrease by more than

[1] This should be emphasized. Many economists are in the habit of arguing as if innovation affected relative prices only (as, in fact, it does directly) and as if, hence, movements of the price level could have nothing to do with it. But it is easy to see that these movements cannot be treated as an independent component of individual prices.

the actual decrease in receipts, as soon as a depression gets under way. There is, hence, no theoretical reason to think that consumers' goods prices must always or necessarily or significantly lag behind producers' goods' prices. Nor is there any reason why they should precede. From our theory (Chap. IV Sec. A) we should rather expect almost synchronous movements in the same direction in all sectors of the economic organism, and differences, in a big country, to be more regional than "stagewise." That this is so, is the most important result to be gleaned from any study of group prices of this class. The facts do not lend much support to those views about the cyclical mechanism from which characteristic sequences would follow, and least of all to the theories about savings deflecting "purchasing power" from consumers' goods to producers' goods.[1]

This does not mean that deviations from synchronous parallelism are either unimportant or uninteresting. They are more important in the first two classes of group prices, but they are not absent in the third class. It would be most astonishing if there were no such deviations, because each group price combines such different patterns of action and response that it would be little short of miraculous if the outcome were equal and synchronous percentage change for all. But the point is that we cannot generalize about those differences, which have their roots in the peculiarities of the individual commodities entering each group and in the conditions of each cycle and, therefore, teach little about the fundamental mechanism of cycles in general. Thus the reader will see from our chart that the producers' goods price composite, although it displays substantially the same rhythm as the consumers' goods price composite, shows greater amplitudes and generally also some precession.[2] But

[1] It is perhaps worth mentioning that one of the many mistaken interpretations of the analytic schema presented in this book was to the effect that, according to it, prices of consumers' goods should be the first to fall and the ones to create "the trouble." This is a complete misunderstanding of the proposition that in the end the cyclical process of evolution means increased real income to all classes, conveyed to them primarily through falling price levels.

[2] One of the first attempts at systematic comparison between producers' and consumers' goods prices was that of Professor Mitchell (see *Bureau of Labor Statistics Bulletin* 173). The period between 1890 and 1913 affords instances for the above: the wider fluctuations in producers' goods prices at wholesale stand out clearly enough. They fell sharply to 1894 and less than consumers' goods prices to 1895. Then they rose in 1896, while consumers' goods prices were still falling; after a setback they rose together with consumers' goods prices, overtaking them in 1898. They did not fall in 1903 and 1904 when consumers' goods prices did. In 1909 consumers' goods prices rose, while producers' goods prices were still falling. In 1913 the situation was similar. But even as far as producers' goods prices can be said to lead, it will be more true to reality to stress the fact that the people who buy them have, as a class, a wider range of foresight, rather than the fact of their position in the productive process.

this is not wholly due to greater distance from the demand of ultimate consumers, which, though it actually is comparatively steady, yet fluctuates quite appreciably in the course of cyclical phases. There are raw materials that have only a short way to go before reaching households and yet fluctuate as much as some others that are a long way off. Comparative steadiness of consumers' goods prices, such as it is, is to a large extent a result of a quite different factor, *viz.*, that consumers' goods prices, even if not retail prices, include more branded and serviced articles than the producers' goods group. Hence, we must not trust too much to mere distance from consumption, but also look for other explanations, such as durability, which accounts for the violent fluctuations in the group price for metals and metal products. Certainly entrepreneurs' demand impinges conspicuously there. But it also impinges on labor and thus on consumers' goods, and there is no cogent reason for assuming, a priori, that the one effect must be stronger than the other. From the standpoint of our model of the cyclical process this is largely accidental.[1]

While these considerations tell, as in fact they are intended to, against theories which assume systematic relations between group prices that do not exist at all or do not assert themselves as clearly as they would have to in order to prove anything for these theories, they do not tell, nor are they intended to tell, against a proposition dear to some "endogenous" or "self-generating" theories, *viz.*, that as prosperity wears on, costs of doing business increasingly encroach upon profits. We do not consider this, taken by itself, to be a satisfactory explanation of the turn of prosperity into recession. Nor are we able to accept as relevant all the factors that have been listed as contributory—losses due to bad debts, for example, hardly increase before, or independently of, the turn. But we do not deny the reality of the mechanism, which indeed forms a part of our model. *Many* "old" firms, as pointed out in Chap. IV, will be inconvenienced from the outset by the rising costs of labor, materials (which however again include labor), credit, and so on, and *most* "old" firms—all in fact that do not receive more than their share of the expenditure induced by entrepreneurial activity—will get into difficulties as soon as entrepreneurial activity begins to slacken, even apart from the effects of direct competition by "new" plants and from the difficulty, frequently

[1] Covariation, tempered by peculiarities of the industries involved, is also the outstanding feature of the movements of foods and materials. Here, if anywhere, should we expect neighborhood of the sphere of consumption to assert itself, since the demand for food is certainly much more cyclically stable than the demand for anything else. It does assert itself, but hardly ever to the point of discrepancy in direction, the cases of which are, moreover, all explainable by circumstances that have nothing to do with the cyclical process. See, for example, the Sauerbeck Food and Material indices, *Journal of the Royal Statistical Society*, 1910, p. 316; 1929, p. 239.

present in the case of finished commodities, of increasing a price which is fixed by custom, business policy, or public authority. As Professor Mitchell has shown, this will, for many industries, result in buying prices of materials gaining on selling prices of products. This, however, has only a distant connection with the relative movement of producers' and consumers' goods prices.

CHAPTER IX

Physical Quantities. Employment

A. Individual and Composite Quantities.—As in the case of prices, we have data about quantities produced, forwarded to mills, transported, exported, imported, bonded, subjected to payments of excise, sold to consumers (sometimes put equal to quantities produced plus imports minus exports), visibly available or reflected by such indicators as spindles active or active spindle hours, furnaces in blast, and the like. These series are very plentiful for the postwar period, fairly plentiful from about 1870, and our stock of them for the more remote past increases steadily. Many are available monthly or even weekly, and all may be said to mean, approximately at least, a definite real thing that it requires no theory to understand. Qualification is necessary, however. Some of the modern and much of the older material is untrustworthy or at least inexact, such as earlier estimates of crops or of pig iron produced or, in times and situations in which smuggling is a factor of importance, figures of imports. Some data raise questions of units of measurement and comparability.

Changes in quality or territory and so on cast doubt on the value of many series. Changes in sources and methods of compilation introduce spurious breaks and fluctuations. The theorist's questions—what is a commodity,[1] a factor of production, a country?—acquire ominous significance for the most practical purposes. In such cases as that of building permits, the meaning itself becomes doubtful. We not only open up obvious sources of serious error, but also obscure essential features of cyclical movements, if from figures measuring one stage of the career of, for example, a raw material, we draw conclusions about another stage—from iron, conclusions about industrial equipment; from wheat, conclusions about bread; or from imports or exports, conclusions about production. Finally, the changing significance and efficiency of indi-

[1] If we call motorcars a commodity, we are immediately, as in the case of prices, faced by an index problem. If we restrict the concept to model X of the firm Y, the material becomes unmanageable. The factor *labor* brings out the difficulty best of all. A country like the United States, or even France, splits into sectors much more different in character than Venezuela is from Colombia.

vidual commodities in consumers' budgets and in the pattern of production, itself a most important feature of the results of the cyclical process,[1] invites erroneous interpretations if the series is not studied in relation to the history of its industry and technology, which alone gives the key to its meaning. Another research program unfolds itself, quite beyond the means of the individual worker.

If we form composites from groups of related commodities, such as foods, furniture, equipment, textiles, and the like, we meet, only with more inescapable clearness, a problem that differs but in degree from the problem which is implied in speaking of a quantity of coal in general or coffee in general. A heap of woolen and cotton fabrics is possibly less wanting in meaning than a heap of iron and strawberries would be. In the most favorable cases, notably in cases of complementarity and rivalry in fixed proportions, but also beyond these, even exact theoretical meaning may be attributed to the composite. We shall not, however, enter into these problems but, simply relying on the common sense of the thing, confine ourselves to the remark that such composites derive additional justification if their constituents are, owing to their place in the economic organism, all exposed to similar external and internal influences. As with group prices, it is necessary to bear in mind that composites may seriously obscure what precisely is the essential fact about the cyclical process of economic evolution.

But the concept of total output lacks similar meaning or justification. The fact that it has gained citizenship and is "recognized" is no comfort, for this recognition has been extended to it quite uncritically. The problem is much more doubtful than the corresponding one in the case of prices. There, we have at least been able to discover and define an economic magnitude that supplied the meaning of an index of the price level. Here, no such thing actually exists. However useful for many purposes, total output is a figment which, unlike the price level, would not as such exist at all, were there no statisticians to create it. We seem indeed to be faced by a meaningless heap.

Three ways are open to us in order to overcome this difficulty, although none of them can be considered as entirely satisfactory. The first has the

[1] In particular, products require as time goes on, less and less of raw materials, such as coal, steel, and sugar beet, per unit. For many purposes, series should be corrected for this. It certainly vitiates the implications of rates of increase in the production of those materials. The use of scrap is an instance of difficulties of another type. Improving quality, still another striking feature of economic evolution, works the same way. It also largely escapes us. We gather from historical indications that even the oldest and most ordinary articles of consumption, such as meat and wine, are quite different now from what they were even 100 years ago. But in most cases we have no means of measuring the change. This really casts doubt on the possibility and meaning of any statement that turns on any but the most outstanding features of our graphs.

merit of simplicity. It was mentioned in the first chapter and consists in fastening upon some series the items of which measure something that may be taken to indicate the variations in productive activity—cyclical variations in particular. All quantity series have some "systematic" significance, but those we have decided to call *systematic* have much more of it than others. Their limitations are, however, serious. Employment, even if statistics for our period were better than they are, would be seriously misleading for periods longer than, say, a Juglar, often for even much shorter periods: in good theory, it can *never* be assumed to be proportional to output (see Sec. *D*). Tonnage cleared, not valueless for Great Britain, is open to objections, not only because of the changing significance of the unit and the changing importance of international trade, but because it puts a ton of coal equal to a ton of gramophone records. Similar difficulties surround the use of figures of freight carried by railroads and, for example, horsepower installed. Pig-iron consumption, though of course not above criticism, does astonishingly well for prewar times, if tested in the light of our historical knowledge of cyclical fluctuations.[1] We will therefore immediately present the series and also the series of rates of change of pig-iron consumption, Charts XII and XIII.

The trends in Chart XII, of course, are the trends of pig-iron consumption and of nothing else. They do not give the trends of total output, since the equipment into which pig iron enters increased faster than other elements of total output, nor do they give even the trend of total "real" investment. Moreover, pig iron cannot be trusted to give the cyclical variation of total output, since cyclical variations in consumers' goods' production are not proportional to, or synchronous with, cyclical variations in the production of equipment. But the fluctuations in the production of equipment (steel did not in our period enter so largely into consumers' goods as it does now) in all three cycles it gives very well.[2] This is particularly true of the Juglar, which it is hardly possible to mark off so neatly in any other series—the reader should mark it off here and use the result for reference. The three curves in a sense interpret each other. The American curve, otherwise the most satisfactory one and that which shows the firmest step, presents a problem for 1875 to 1885

[1] Pig iron held its own fairly well until about 20 years ago, though the process of ousting it had set in by the sixties. Later, castings were quickly going out and weldings became of much less weight. Lighter alloys also came in, and other metals gained relatively, particularly aluminum. The increasing use of scrap has been mentioned. On the other hand, iron and steel gained ground at the expense of timber and other materials. As has been mentioned, consumption of pig iron has been used as the backbone of the analysis of cycles by Professor Spiethoff.

[2] There is some interest in noting that England's pig-iron consumption hardly took part at all in the Kondratieff prosperity after 1897—another indication of the fact that the entrepreneurial impetus in English industry began to slacken about that time.

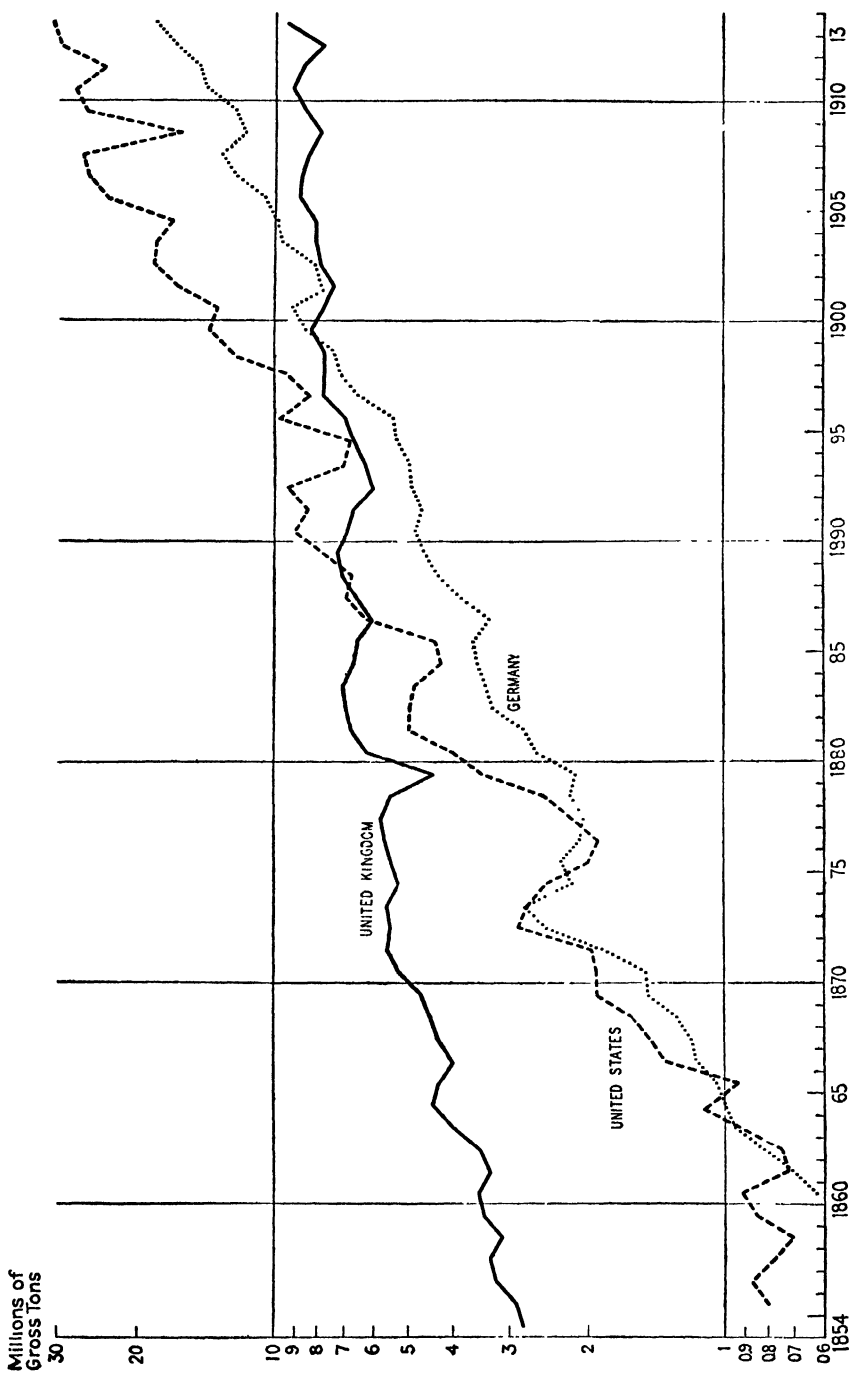


CHART XII.—Pig iron consumption (see Appendix, p. 1055).

that we know how to solve as soon as we glance at the English and German lines, the behavior of which is in turn cleared up by the American line in the segment 1885 to 1892. The differences between the three lines in average amplitudes and general character are very revealing of the pulse of economic evolution in the three countries. The Kitchins, so the writer thinks, show with sufficient clearness on Chart XIII. No doubt some readers will not agree. To probable objections it can only be replied that it seems a mistake to refuse to consider as a distinct class fluctuations which are so similar in nature and so clearly marked, only because they do

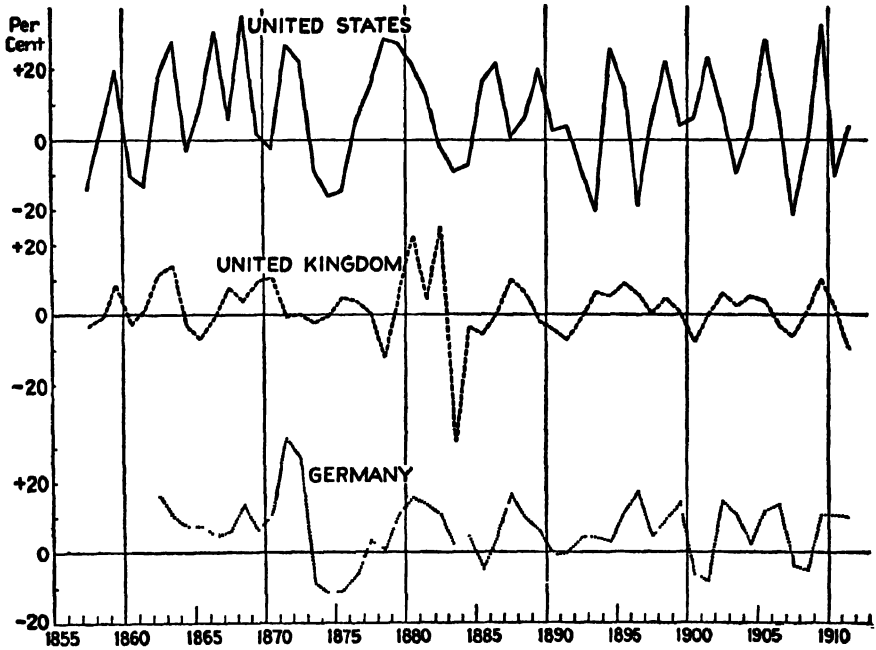


CHART XIII.—Rate of percentage change of pig iron consumption (see Appendix, p. 1056).

not display a regularity that simply is not in the phenomenon. Chart XIV is presented in order to indicate how far other series of more than average systematic significance could render the same service.

We may, in the second place, define variations in the "physical volume" of any composite to mean variations in its dollar volume corrected for changes in price level. The result, it should be noted, is still a value, and not a true physical quantity, as we might expect according to those definitions of price level which make it a sort of average price. Our level is not a price but a pure number. Hence "deflated dollar volume" is simply a value figure from the variations of which the effects of the variations of the monetary parameter have been removed. However,

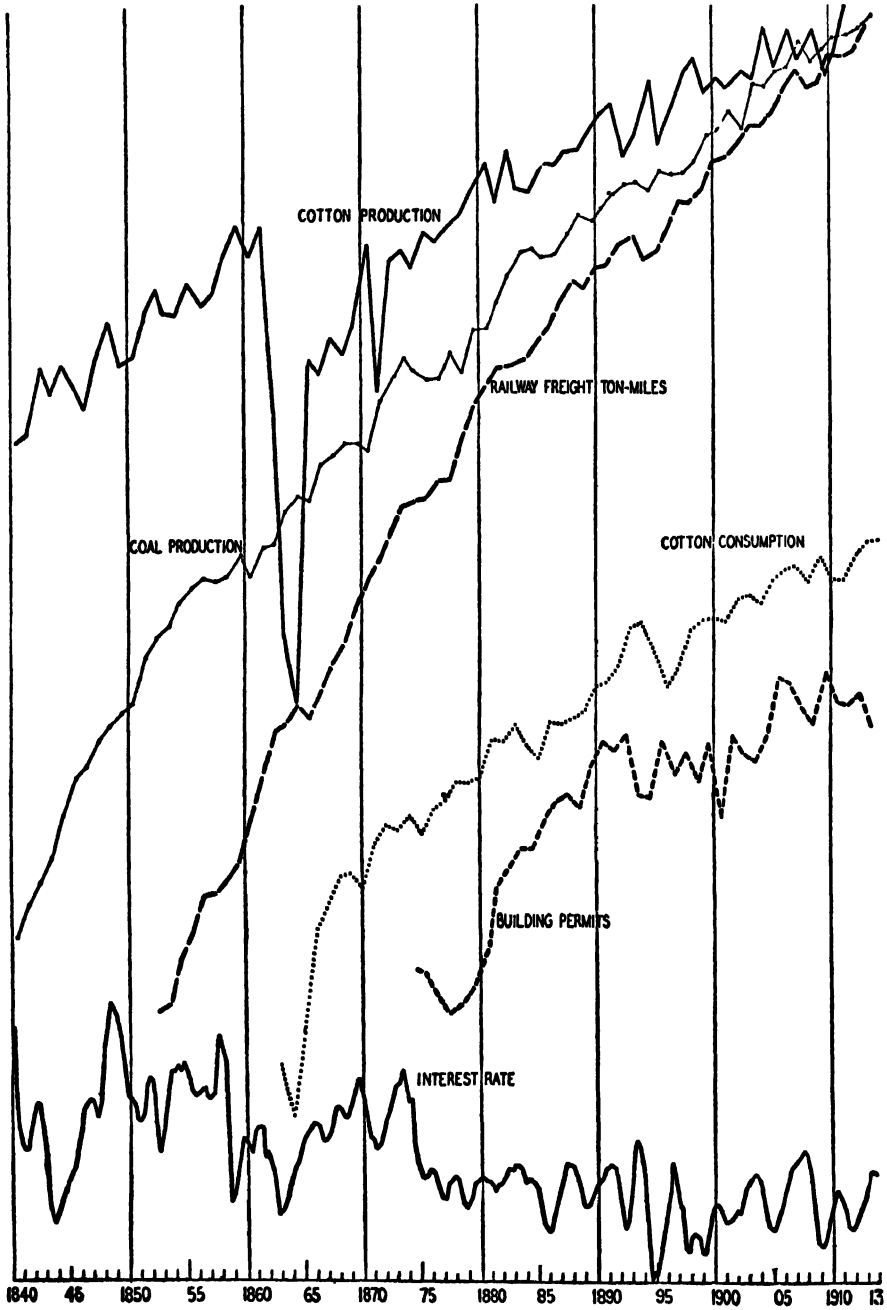


CHART XIV.—United States (see Appendix, p. 1056).

this has definite meaning, and these corrected figures may for some purposes be treated as if they were physical quantities. It should be observed that, in order to effect this, it is necessary to deflate by an index which approximately presents our level concept, and not by any other—for example, an index specially constructed to include only the prices of those commodities that enter into the given composite, with weights that correspond to the relative importance of those commodities in the composite. We are not concerned with the question whether the latter proceeding has any meaning of its own. All that matters is that this meaning is a different one.

The money value of Total Output (unfortunately along with other items) is reflected in Outside Clearings, the value of Total Output of Consumers' Goods, in the Sum Total of Private Incomes minus savings and taxes paid out of income. Where we have these two figures, or at any rate one of them, we might hence try to solve the problem in hand by deflating. The reasons why we do not primarily rely on this possibility will be apparent later when we discuss the Clearings and Income series. Insuperable theoretical scruple is not one of them. But although we make bold to use as a level series what we know to be something else, and although we may be equally bold in the case of Clearings and Incomes taken by themselves, we hesitate to cumulate errors by combining the two, even apart from various other objections on the score of statistical method.[1]

A third method of arriving at a single figure indicative of variations of total physical quantities of commodities produced or consumed (services and voluntary leisure ought, strictly speaking, to be included), consists in constructing an index from individual quantity series. Everybody recognizes that quantities produced, consumed, and in stock, ought to be separately combined and that these separate indices should be confronted, but everybody puts up with a combination of everything that is to be had. The leading contributors all have a preference for weighting individual relatives, or relatives adjusted for some trend and for seasonal variations, with the American Value Added by Manufacture or the English Net (Value) Product, where products of different stages of a productive process are included. But, in cases in which these values are not available, some fall back upon other criteria of relative importance, such as workmen employed, pay rolls, horsepower installed, and so on—none of which they

[1] Mr. Snyder's "A New Clearings Index of Business for Fifty Years." *Journal of the American Statistical Association*, 1924 p. 329, does precisely this, except that he deflates by his General Price Level, which, for the case in hand, is an index specially constructed to correspond to the various components of the Clearings figure. The above argument is not intended to imply adverse criticism of this interesting experiment.

would defend on theoretical grounds.[1] The formal theory of such an index is easy to derive. All we need to do is to change the Laspeyres formula for the price level (see Chap. VII, Sec. *B*) $L_p = \Sigma p_1 q_0 / \Sigma p_0 q_0$ into the obviously equivalent expression $L_p = \dfrac{\sum \frac{p_1}{p_0}(p_0 q_0)}{\Sigma p_0 q_0}$, where the values $p_0 q_0$ are, in the numerator, now used as weights of price relatives, and to form the analogous expression for quantities, *viz.* $L_q = \dfrac{\sum \frac{q_1}{q_0}(p_0 q_0)}{\Sigma p_0 q_0}$, which means quantity relatives weighted by values, though not by added values. But putting, as we did before in the case of prices, $q_1 = q_0 + dq_0$, and dropping subscripts, we get

[1] There are available for the postwar time and particularly for this country indices of this kind which excel in careful construction and technical perfection. Given the limitations imposed by the material and granted the principles upon which their construction proceeds, they probably do as much as can fairly be asked in all such matters as assembling and criticizing the material, and correcting for seasonal variations and differences in working days. The pioneer work of Mr. E. E. Day and the Harvard Society, its continuation and amplification by the Federal Reserve Board, Prof. Warren Persons' and Mr. Snyder's contributions, the indices of the Standard Statistics Company and of Mr. Leong, the English index of Mr. Rowe and the London and Cambridge Economic service, and the German indices of the Institut für Konjunkturforschung must be specially and gratefully mentioned. In particular, the distinction, fundamentally important as we shall presently see, between equipment goods, other producers', and consumers' goods, has been fully attended to. For the prewar time we are less well off, of course. There is, again, Mr. E. E. Day's work and the work of Professor Warren Persons. Earlier pioneers ought to be mentioned, notably E. Leonard: Index of Changes in Extractive Industries (Publication of the American Statistical Society for September 1913) and, although their investigation bore on trade rather than production, Professors E. W. A. Kemmerer and Irving Fisher. The subject is also indebted to Professor W. J. King, Mr. W. W. Stewart (see the latter's Index of Production, *American Economic Review* for March 1921) and Mr. W. Thomas. Mr. Snyder extended his researches back within his work on his index of trade. Professors Warren and Pearson have made an extremely valuable contribution as to basic and agricultural production. The Index of General Business of the American Telephone and Telegraph Company has, in 1922, been reduced to an exclusively physical index. Colonel Ayres' index contains also prices and values from 1790 to 1855, but is exclusively physical from 1855 to 1901, with, however, such weighting as would make it lean on the Day-Thomas index used by him for 1901 to 1919. For England there were only various indicators and individual bits of information (for the early part of our period, largely contained in Porter and Baxter), but we may now use the index compiled by Mr. Hoffmann of the Kiel Institut für Seeverkehr und Weltwirtschaft, which, however, had to work with material not admitting of any rational system of weighting. It goes back to 1713 but we use it only from 1785, because before that date component series are too few. Mr. Snyder's index of English production should also be mentioned. For Germany, we use the Index of the Institut für Konjunkturforschung, compiled by Mr. Wagenführ, who has had to substitute, in some cases, for figures of production or consumption, figures of net import, railway transportation, or even money value.

$$L_q = 1 + \frac{\Sigma pdq}{\Sigma pq},$$

that is to say, an index of that part of the actual relative variation in expenditure, $(E + dE)/E$, which as we have put it before, is balanced as to its effects on the price level by changes in physical quantities and by which expenditure would have had to change in order to keep the price level constant.

Hence we have again a value figure from which the effects of changes in the monetary parameter have been removed. The method is thus seen to be but a variant of the method of deflating values. It aims at what is essentially the same thing. However, it not only avoids the difficulties that arise from the nature of the clearings figure and the cumulation of errors incident to the process of deflating, but is theoretically superior to the latter, in that it follows logically, and derives its meaning, from the equation which embodies the theory of the price level and can, owing to this fact, never give absurd results.[1] If we recall how in the fourth chapter we defined the effects of innovation on the depth and breadth of the stream of commodities, we see immediately in what sense such an index implements our propositions about variation of output in the course of business cycles. It does not measure physical output in the literal sense, but it does measure physical output as transformed by the introduction of an economic dimension. An argument would be in order here for taking account of the structure of the world of commodities by the choice of commodities to be included. But since it would, *mutatis mutandis*, only repeat what has been said on this question in our discussion of the level index, we will not stay to develop it.

B. The Analysis of the Trend in Total Industrial Output.—Quantities produced or consumed are, unlike prices, rates per time element. Their variations in the course of cycles are part of the primary as well as of the secondary phenomena and, within both these categories, consequential with respect to some, causal with respect to others—the most important approach to a primary causal role being the relation of actual or expected release of new products to the turn from prosperity into recession. An index of Total Output makes a synthetic, systematic, and cyclical trend series.

To verify expectation as to the presence of a trend, it is only necessary to look at the quantity lines in charts V, VI, and VII. Moreover, Chart

[1] It should be noticed that the Harvard Index of Physical Volume, which is in essence such a corrected value, in the short run goes very well with Freight Cars Loaded, if both are adjusted for business days per month and for seasonal variations, and treated according to the Harvard method. See W. M. Persons, Car Loadings as an Index of Trade Volumes, *Review of Economic Statistics* for October 1926. The same is true for Germany, see W. Teubert, Der Güterverkehr, *Sonderheft 5* of *Vierteljahrshefte zur Konjunkturforschung*, 1928.

XV presents an international comparison that is of some interest, although, owing to differences in materials and methods it must not be relied on too implicitly. Chart XVI gives the same series as transformed by the operation of empirical differentiation and, by the absence of any marked trend, teaches us something about the character of the trend present in the original figures. Of course, this does not mean that with other data the same result would emerge, or that any trust can be placed

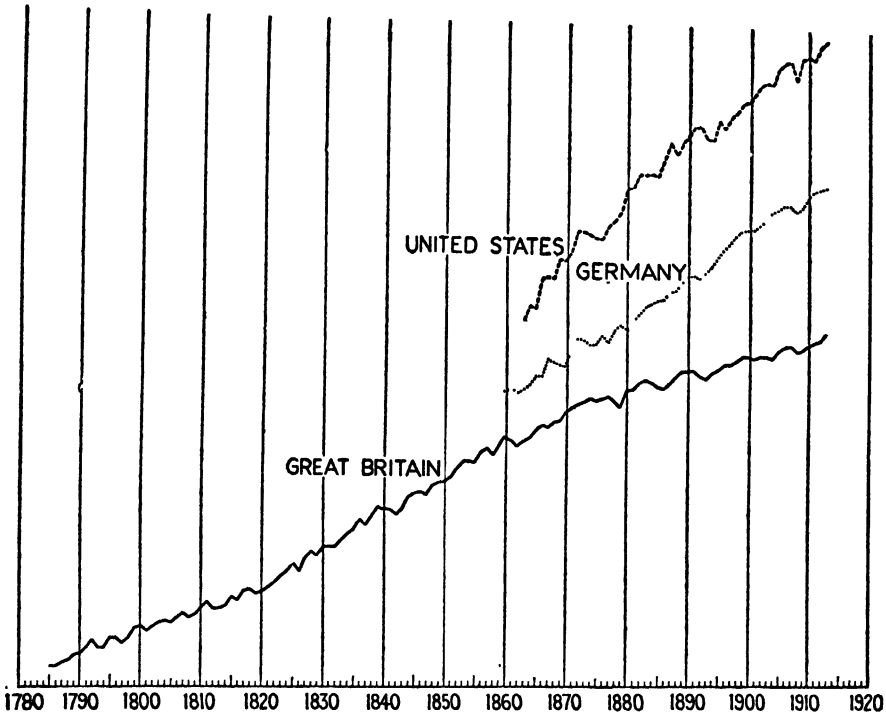


CHART XV.—Industrial production (see Appendix, p. 1056).

in the gradient of the particular logarithmic straight line which an investigator's material may yield. Some authors who speak of a "compound interest law of growth" seem, like the queen in the play, to protest too much. Still more treacherous and pregnant with danger of speculative temerity may be the application of Verhulst's formula, $y = \frac{a}{be^{-t} + 1}$, which was intended (1838) to represent certain features of organic or of similar types of growth.[1] Even perfect fit in the least square sense would

[1] Compare, for instance, Wittstein's formula in Gesetz der menschlichen Sterblichkeit, 1883. Verhulst's formula is used (slightly generalized) by A. J. Lotka. The form $\frac{a}{10^{bt} + c}$ is known in this country as the Pearl-Reed curve.

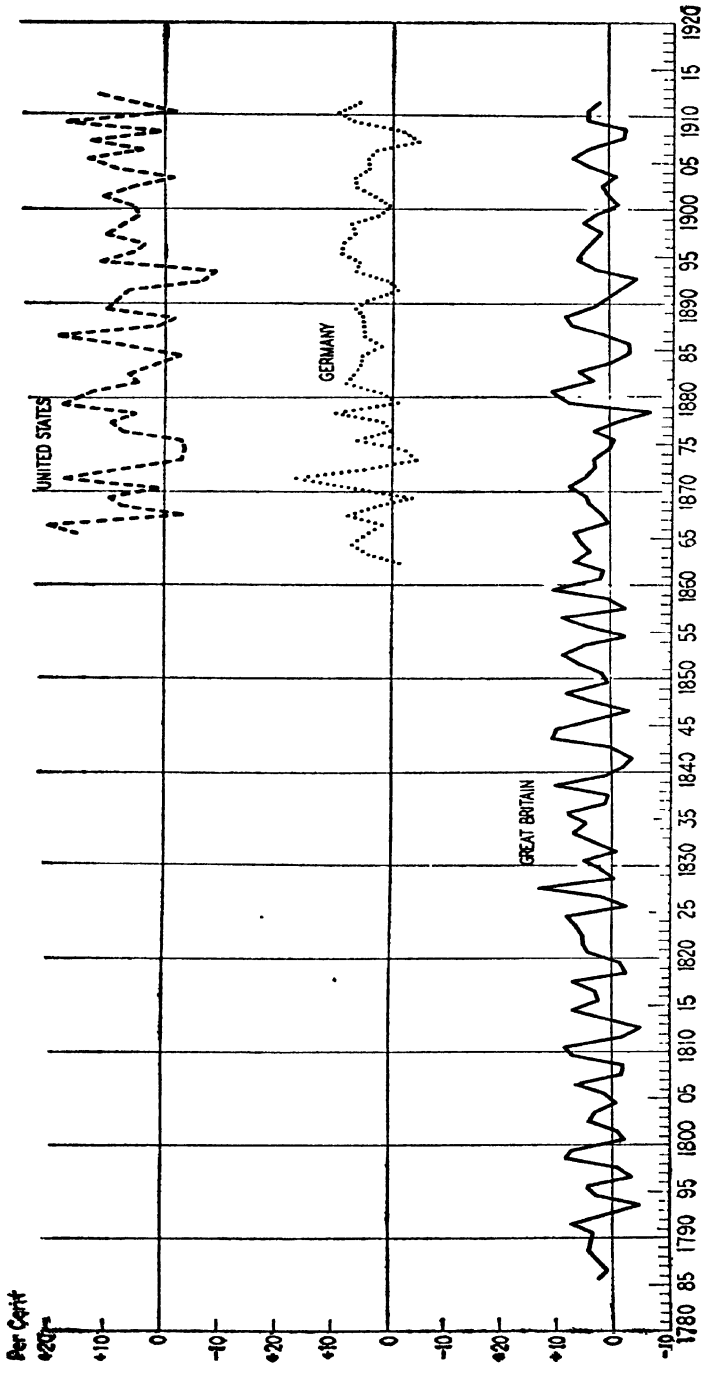


CHART XVI.—Rate of percentage change of industrial production (see Appendix, p. 1036).

not prove anything. We are, however, on somewhat safer ground when applying such expressions to the behavior in time of quantities of individual commodities.

The broad fact of great steadiness in long-time increase nevertheless remains, both in the sense of rough constancy of the gradient of the trend and in the sense of what, merely by way of formulating a visual impression, we may term the general dominance of trend over fluctuations. As a rule, even strong depressions such as the English one of 1825 could hardly be identified as such from the output graph alone. In no country does 1873 look very catastrophic. In America, 1884 produced almost no fall at all. The crisis of the early nineties shows, for Germany, by only an inconsiderable dent. In the long English series it happens only twice that absolute fall outlasts two years. In the case of Germany, this occurred only in 1868, 1869, and 1870; in America also but once. One of the most important tests of an analytic model of the cyclical process of economic evolution is whether or not it enables us to understand that steadiness in both senses (such as it is).

What we see, is, of course, only a descriptive trend. In the same sense as in the case of the price level we interpret it as a result trend, blurred and deflected by outside disturbances which, particularly if a trend line be fitted by least squares, may acquire lasting influence, even if passing by nature. And there is also the effect of growth. As has been pointed out before, no satisfactory method is known to the writer of eliminating these influences, and what follows must be read with due regard to the qualifications that this disability implies. The result trend itself must be explained from the behavior of output in the cycles that generate it. Before taking up this subject, we will digress, in order to comment on some questions which, though they do not strictly lie on our path, yet come too near to be passed unnoticed.

It is reasonable to believe that if our analysis enabled us to isolate and measure the result trend in output plus the effect of growth, instead of merely teaching us to recognize their presence in our series, the output curves would turn out to be steeper than the descriptive trend, because practically all the other factors which influence the latter are of the nature of injuries inflicted upon the economic organism. This way of expressing a patent historical fact should not be understood to imply adverse judgment about what, from our standpoint and for our present purpose, would have to be included among injuries. Many measures of social betterment that most people heartily approve of and many nationalistic policies that command fervent allegiance come within the meaning of that term, simply because they prevent the economic machine from working according to its design, but nothing is further from the writer's mind than to hold that it "should" be allowed to do so, or that everybody would be

happier if it were, or that abundance is the criterion by which to define welfare or to judge a civilization. Nevertheless, the descriptive trend of output is both in itself and because of the idea, however vague, which it gives us about what the combined effects of evolution and growth would be in the absence of other factors, for a purely economic analysis, a fact of importance. In a sense it is the most important fact about the economics of capitalist society as distinguished from its culture and the type of man it creates. In beholding it we have before us a measure of the *actual* economic result of humanity's great experiment with private business and the acquisitive principle.

Whether the gradient we observe is only, as we implied above, what is left of an even greater possibility or whether the injuries referred to are the outcome of the capitalist process itself and, hence, to be recorded against it and inseparable from it, need not detain us here:[1] this is a question that cannot be dealt with without entering into the theory of the nature and behavior of social classes. Nor does it concern us how capitalist performance compares with the performance we could expect, or could have expected at any time, from alternative institutional arrangements. Theories that seem convincing and are sympathetic to some have been offered, in order to make out a case for the proposition that the economic engine characterized by private enterprise necessarily turns out the maximum of output which it is, or was, possible to produce within the framework of natural, technological and political data. Other theories that seem convincing and are sympathetic to others have been offered in support of the proposition that it is of the essence of the system of private enterprise to produce less than could be produced within the same circumstances. There is little to choose, as regards looseness of logic and carelessness about facts, between the two types of argument. We will confine ourselves to noticing the following points.

First, from the indubitable fact that the capitalist arrangement tends to draw the best brains into business pursuits and to spur them to do their utmost, it does not follow that these efforts must necessarily issue in maximum production, although that fact remains relevant to the argument.

Second, for perfectly competitive conditions it can be proved, with but unimportant exceptions, that states of perfect equilibrium will in fact be characterized by maximum output. This proposition is not made entirely valueless or tautological by all that has to be assumed

[1] We met that question before in our discussion of the concept of external factors and repeatedly in our historical sketch. We take here the same standpoint as we did there: there is obvious sense, we admit, in saying that if a man takes to drink because of ill-health, the effects of the alcohol are to be included in a full description of the working of his organism. But they are still due to a distinguishable factor which for many purposes should be dealt with separately. We shall not leave this standpoint except for a short passage in Chap. XIV.

in the process of proving it. Refinements of analysis often render what amounts to a disservice in such matters by unduly emphasizing qualifications of little practical significance. But the analogous proposition can similarly be proved for the case of a socialist organization.

Third, any argument to the contrary that runs on the lines of economic principle at all must mainly rest on imperfections of either competition or equilibrium. These, however, yield so strong and so universally recognized a case against the pretended efficiency of the capitalist machine that it becomes necessary to recall, on the one hand, that a system in which imperfect competition prevails will, contrary to established opinion, produce in very many, perhaps in most cases, results similar to those which could be expected from perfect competition and, on the other hand, that even if a system consistently turned out less than its optimum quantity, this would not in itself constitute disproof of optimal performance over time.[1] Whoever wishes to hold, either that imperfect competition entirely inverts the working of the system, or that failure to produce instantaneous maxima spells failure to evolve along a path of maximum production in the sense alluded to, will therefore have to embark upon a much more arduous analysis than is implied either in reasoning from a few assumptions or in analyzing individual facts without relating them to the whole of the economic process. He will be on much safer ground, however, if he starts his attack from other than purely economic standpoints.

Fourth, whoever wishes to hold that capitalist performance in fact lives up to the possibilities which the capitalist system itself creates, and that either the descriptive trend, or what one may conceive the true result trend plus growth to be, really represents the possible maximum output over time, is of course under the same necessity. Such a venture, to which theory can only contribute a technique of inference, is in the present state of our factual knowledge probably beyond the means of the individual worker.[2]

[1] For any dynamic system (economic or other) may work in such a manner that it produces its optimum (with reference to any criterion) over time, only at the price of never reaching it at any point of time. This is not more paradoxical than, for instance, the fact that producing at minimum cost over time may, in the case of lumpy factors, imply never producing at minimum cost on any of the short-time cost curves because another "method" becomes more advantageous before that point is reached. The proposition may further be illustrated by that kind of excess capacity which is an unavoidable incident of quick "progress." The first of the two propositions contained in the above sentence may be illustrated by that case of monopolistic competition in which there is a great number of actual and possible varieties of a commodity that are highly substitutable for each other. Part of what has been said on imperfect competition in the second chapter will help to establish the point.

[2] Many engineers and efficiency experts, particularly of the technocratic type, are not of this opinion and find it extremely easy to collect overwhelming evidence of underutilization of resources. But this only proves that they have not even seen the problem.

But whether or not the descriptive trend traces out a path of maximum production—be this maximum relative to capitalist conditions or to more general ones—the fact remains in any case that such performance as that trend embodies is not only historically *associated* with that concentration of human efforts on private economic ends, with—perfectly or imperfectly—competitive private enterprise, with intensive saving, in short with "profit economy," but also either wholly or to a considerable extent historically *dependent* upon it: so much is clear from our analysis and so much would—witness the Communist Manifesto—have been admitted by Marx himself, though not by many of his followers. Since extrapolation of the descriptive trend yields the result that the profit economy would, if allowed to work on, do away, in a not distant future,[1] with anything that can according to present standards be called poverty, it is of some interest to inquire whether there is any warrant for such an extrapolation. This raises the question of the phenomenon of retardation in rates of increase, which some students believe our physical series display.[2]

Within the range of problems we are envisaging at the moment, the question carries meaning only for total output or total output of consumers' goods. For it is obvious that even if we disregard the phenomenon, fundamental to economic evolution, of displacement of old commodities by new ones, no industry can go on expanding output at the rate of its innovation stage. Each reaches maturity in the sense that it finds its place in the economic organism and the amount of output beyond which it cannot profitably go, unless that amount be increased by some further innovation within it or in some "complementary" industry and by the general effects of increasing wealth (which, however, may also be negative) and of Growth. But it is equally obvious that by itself neither absolute rate of increase nor rate of increase per head of population corrected for age distribution, will give us the information required, for, to exemplify by a strong case, absolute decline in population may so reduce the wants of the community that even strong and persistent progress in efficiency of the productive engine could be powerless to balance the effect on total output, while such decline may produce rising per capita figures without any "progress" in our sense, possibly even with a negative one. Finally, we should take account of variations in the amount of voluntary leisure, which may be and undoubtedly often is one form of taking increased real income in the Fetter-Fisher sense:

[1] For the United States, we find, assuming the population to reach the figure of about 160 millions in 1978 and production to increase at 3 per cent compound interest, that income per head would in that year be about $2,300, purchasing power of 1928, when income per head was about $700.

[2] The idea is an old one and has taken several different forms. But we will mention only Professor S. Kuznets, Secular Movements in Production and Prices, and Mr. A. F. Burns, Production Trends in the United States since 1870.

in this sense the reduction of working hours is one of the most significant "products" of economic evolution. All this illustrates the difficulties of speaking of retardation if the object is to measure capitalist performance with a view to deciding whether or not there are "hitches" inherent to the working of the profit economy that tend to thwart mankind's economic possibilities. Further illustration is afforded by the following examples of actual or possible causes of retardation.[1]

First, we will restate statistical reasons, all of them previously mentioned. As in the case of indices of price level, we have to accept the fact that any index of total or of consumers' goods' output will in general be influenced by individual and group developments. In the case of the production index, this spells downward bias: new commodities and finished commodities are inadequately represented, services (and voluntary leisure), not at all, while commodities that are in the process of being displaced loom large. Improvements in quality, particularly in durability, largely escape, and they may in many cases be increasingly important. The quantities of raw materials and semifinished goods which form the bulk of what enters into indices of output are, in the course of technological progress and because of the spreading use of waste or scrap, made up into increasing quantities of finished goods, so that observed retardation may be spurious and even indicative of its very opposite. Finally, the period 1897 to 1913 covers the prosperity phase of a Kondratieff—a fact that would, according to our theory, be sufficient to produce an impression of retardation if comparison is with the years of Kondratieff depression and recovery, 1870 to 1896.

Second, there are what we may term sociological reasons. Some of them—which may account for some slackening in entrepreneurial effort and cognate phenomena—have been alluded to in the third chapter and will cross our way again in our discussion of the postwar period. But it has also been pointed out that, in part at least, economic evolution grows increasingly independent of the typically capitalistic pattern of cultural values and motives. In any case, the writer believes it to be safe to discard this group of factors in an interpretation of American and German developments during prewar times, although in the case of England we have seen reasons for some doubt about this.

[1] The reader should compare Chap. IV of Mr. Burns's book mentioned in the preceding footnote for a suggestive discussion. He will find that statistical difficulties, formidable as they are, are secondary to the difficulties of interpretation which of course differ widely according to the purpose in hand and can be expected to yield only to most careful analysis of industrial processes in detail. Inferences as to decreasing returns or any slackening of rate of progress in efficiency (as measured by service) may easily prove misleading. As to the immediate statistical result of Mr. Burns's investigation, the writer agrees with the views expressed by Professor Mitchell in the preface to that book. Compare also Professor Crum's review in *Quarterly Journal of Economics* for August 1934.

Third, we have the economic reasons. What eventually may turn out to be the most fundamental of them and also account for some of the sociological ones—increasing satisfaction of wants—can hardly have been operative in our period. For it takes more for it to assert itself than the mere fact of declining marginal utility of income, and of the many subtle elements that enter into this problem none can be identified with any certainty unless indeed we interpret certain cases of the struggle for shorter hours in this sense. Nor can decreasing returns, in the sense of increasing difficulty of procuring food stuffs and raw materials, have played a major role for the period as a whole. Any Kondratieff prosperity will of course tend to display—up to a considerable level of general wealth—rising prices in both those groups, and this each time deceives many economists into believing in a secular law of decreasing returns. But it is a temporary phenomenon or, at all events, it has been a temporary phenomenon during our period.

Again, it is precisely the increasing abundance of foodstuffs and raw materials within the period that has by some economists been made the basis of an argument that would, if true, tend to establish retardation in a special sense and at the same time explain the failure to come true of Marxian predictions about the mass misery which was to result from the working of the capitalist mechanism. It is held that there would have been retardation either from decreasing returns or from the nature of the profit economy but for the fact that the opening up of new countries temporarily put decreasing returns out of operation, and that it is bound to set in as soon as this unique opportunity is exhausted. We have noticed, in Chap. I, that it is not correct to consider the actual opening up—as distinguished from the discovery—of new countries as a factor external to the economic system. The processes of exploiting a new country are but a type of innovation and alter the data of the economic process in no other way than do other innovations. Hence, their effects are properly included in a measurement of capitalist performance. Nor does any prognosis of retardation follow, for it is only one of many types of innovations—and one only of the many types of innovation in the fields of foodstuffs and raw materials—the possibilities of which thus become exhausted. The possibilities of each individual type do so, of course, but nothing can be concluded therefrom for innovation in general.

Most of us seem here to commit a mistake in handling the concept of decreasing returns. In its proper sense it applies to given production functions and generally stationary conditions plus Growth only. In order to make it relevant to any forecast about the future course of production, it must be used, as indeed it has been used already by Ricardo, in a different sense, namely in the sense that action of the "static law" of decreasing return will indeed be interrupted by innovation but

that the latter will be powerless to compensate its effects in the long run —that, as it were, there is a law of decreasing returns from successive innovations. And in this sense the statement is entirely unwarranted. Owing to their unpredictability, future innovations may be less or more conducive to increase of means of satisfying wants than were previous ones. "The great things may be done" but they may equally well be still to come: while the earth can be surveyed and better opportunities (relative to each given state of technique) for its exploitation may be taken up first, so that inferior ones only are left for the future, the world of possible innovation cannot be mapped out.[1] Postwar agricultural history testifies conclusively on this point.

C. The Cyclical Behavior of the Physical Volume of Production.— It will be recalled, first, that our theoretical expectation as to the behavior of total output was the net result of our theoretical expectations as to the behavior of two constituent groups centering respectively in producers' goods and the commodities that enter into the budgets of households and, second, that it changed with successive approximations. What that net result will be in the case of any given index cannot be predicted unless we know what commodities are included and how it is constructed. This applies with greater force here than in the case of the price level, because total output is not a definite real thing. The comparative steadiness (in the sense, say, of "good" fit to the material of an expression of the form $y = ax^t$) of our output series is not in strict theory primarily due to steadiness of its individual constituents, nor simply to the smoothing effect on random fluctuations in constituents of combination into an aggregate (though this effect will also be present, of course), but to different rhythms in the two groups of constituents. These rhythms, already somewhat toned down in comprehensive composites of producers' and consumers' goods,[2] are further reduced in amplitude by a number of factors mentioned in Chap. IV, which we will presently restate.

Our expectation that total output will increase through all phases of the cycle, "deep" depression alone excepted, is derived as follows—the exception hardly ever extending over the whole of the depressive phase,

[1] Professor Kuznets, *op. cit.*, in fact, assumes the existence of such a law of decreasing returns of economic progress, and has tried to establish it by analyzing the effects of successive innovations in technology. The partial success of this analysis is, however, merely due to the fact, noticed above, that in every industry innovation tends to exhaust itself for the time being and to taper off into comparatively unimportant improvements of the induced or completing type.

[2] For obvious reasons, durable consumers' goods will display a tendency to conform to the behavior of equipment goods. We shall repeatedly refer to this fact, which tends to accentuate fluctuations. So does the practice, widely observable, of putting off the replacement of equipment in depression or even concentrating it in prosperity.

since it is due to panics and vicious spirals, which as a rule do not last more than one year.[1] As for equipment industries and their satellites, expectation from our model does not differ from accepted opinion and only provides explanation of a fact universally admitted and sometimes even overstressed.[2] Quantity taken should increase in positive phases and decrease, or increase less, in negative phases. Quantity produced may be, and undoubtedly often is, particularly in the course of the shorter cycles, interfered with by exports and imports and other circumstances, but should still move substantially the same way. Of course it is necessary to take account first of the interference of cycles with each other; second, of the fact that if *entrepreneurs'* demand for equipment slackens —or, in strict theory, is absent in three of the four phases—the demand for equipment that is *induced* by entrepreneurial activity not only does not cease, but actually concentrates in recession and revival; and, third, of Growth, particularly in the Kondratieff. Inasmuch as we may take pig iron as a representative of the equipment group, our chart of pig-iron consumption may reasonably be said to verify that expectation. Also, the chart of rates of change should now be compared with the chart of rates of change of total output.

We shall expect wholesale prices[3] to precede the output of pig iron or, for that matter, of equipment goods—at least, in the shorter cycles—not only because transactions precede production and because of the effect of speculative anticipation, but also because wholesale prices will in

[1] As in the case of the price level, we shall associate them with the two short cycles, because in the long and gentle sweep of the Kondratieff they would hardly arise. This does not mean that the Kondratieff has nothing to do with them: conditions of the underlying cycles always influence events in the course of the superimposed ones.

[2] We may illustrate that received opinion, first effectively preached by Tugan-Baranowsky, by a quotation from Marcel Lenoir, Etudes sur la Formation et le Mouvement des Prix, 1913 p. 77, of the implications of which we, of course, do not approve: "la cause profonde des fluctuations périodiques de la vie économique . . . est la demande intermittante de capitaux fixes nécessaires, de temps en temps, pour la réfection et l'augmentation de l'outillage économique." If *réfection* and *augmentation* were all, it would not be easy to see why demand for "fixed capital" should be intermittent. But there is almost universal agreement about the fact.

[3] We shall not be so sure about the price of pig iron itself. In strict theory, this price should not increase in revival, since the demand for new equipment for new purposes does not set in until the end of that phase. But both replacement demand and demand from investment opportunity created by innovation in the previous prosperity will assert themselves in recovery. On the other hand, iron and steel, being cyclical industries and holding a reserve of capacity, need not react by increasing their prices at first, *i.e.*, in revival, or even at the beginning of prosperity. The reader will find all this very complicated. If thereby he means that it would be more pleasant if reality were simpler, the writer can only heartily agree with him. If he thereby means to record an objection to our analytic schema, the writer does not agree. He is unable to see any merit in a theory yielding simple and clear-cut propositions which do not fit facts.

general have to make up for a fall in depression and hence display an increase in revival. According to the method of "lags of maximum correlation" (*Review of Economic Statistics* 1919, p. 184, *et seq.*) this, in fact, is so. If indices of producers' goods consist wholly or mainly of equipment goods, the same will hold true for them. Of course, no causal role of prices or of the mechanism of money and credit follows from that.

But our expectation as to finished consumers' goods and their satellites, which finally boiled down to expecting that their output should increase more in recession and revival than in prosperity, runs counter not only to public opinion, but also to the opinion of most students of cycles. In its "pure" form, our model yields the expectation that in prosperities the output of producers' goods should at first increase at the expense of the output of consumers' goods. The latter should, even absolutely, decline, and if the innovations in question be of the type of railroad construction, no fully compensating increase of the former might show for years. In general, however, new products will be released as prosperity wears on, their impact being part of the mechanism that eventually turns prosperity into recession. Hence decrease could show only in a segment between recovery and the later stages of prosperity. But the avalanche of consumers' goods and their satellites should come in recession. Their output should continue to increase, barring panics and spirals, in depression and display the strongest increase in recovery.

But this principle holds strictly true only if prosperity starts from perfect equilibrium in perfect competition. This not being so in reality, business will respond to brisk demand by almost immediate expansion of total production and no decrease in consumers' goods production need occur in prosperity. The presence of cyclical industries acts especially strongly in the same direction. Moreover, the facts that we refer to under the heading of Growth must blur the picture. The population of the United States increased from 1839 to 1915 at a compound interest rate of 2.28 per cent per annum,[1] and we may assume that for most of that period no tendency toward diminishing returns exerted appreciable effects. This alone would be sufficient to produce an increase of physical production during prosperity phases and to wipe out the effects of any tendency in the opposite direction such as could be expected from the working of our mechanism. But while this tendency will therefore generally fail to show, dips due to the breakdown of the Secondary Wave and to the other depressive factors will almost always show. They influence both people's opinions about the nature of downgrades and the statistical

[1] It should also be taken into account that all the time the average age of the population was increasing. It was around seventeen years, 1790 to 1810 (white males only). It was eighteen by 1820 (whites only), and twenty-three years by 1910 (all persons). See Census of 1920, vol. II, p. 148.

picture. It should be observed that they are likely to distort a short cycle more than a long one, in the course of which there is time for things to straighten themselves out into their true form. We shall, hence, expect the facts to conform best to the above expectation in the case of the Kondratieff, less so in the case of the Juglar, least of all in the case of the Kitchin cycle. A spurious deviation from expectation should also be kept in mind, in this as in all other cases. If there are four phases and depression contains a span of actual fall of output, then revival will be the phase in which what would happen in the downgrade of a two-phase cycle will be most clearly in evidence. But most writers date cycles from troughs, and to them it must of course seem as though we were contradicting an obvious fact.

As stated above, we must in this case, as in all, read any statement with reference to the presence of three cyclical movements that superimpose themselves on, and interfere with, one another. Although this is more difficult to take account of, because the span covered by material at all reliable is so short, it thereby loses nothing of its importance. Investigation into the details of each small wave would be necessary in order to illustrate it. On the downgrade of a Kondratieff, the increase in consumers' goods incident to its mechanism will tend to overshadow any opposing tendency of opposite phases of the shorter cycles. But this is not all. It must be taken into account also that, as in such a downgrade everything is technically and commercially prepared for expansion, this expansion is particularly likely to show under the influence of increasing expenditure induced by prosperities of the shorter cycles, while their depressions, notably if coinciding, are likely to spell panic and paralysis of business and so to inhibit the release of the products of the new industrial apparatus, amid general complaints about price wars, cutthroat competition, and overproduction. On the upgrade—witness the "hungry forties" and conditions around the turn of the century—the sweep of the Kondratieff intensifies the tendencies of prosperity phases of the shorter cycles and weakens those of their recessions and revivals. An example showing how important it is to attend to that phenomenon is afforded by the indubitable fact, noticed in the preceding section, that from material covering 1870 to 1913 it is possible, for all three countries and many others, to show the presence of a long-time tendency toward declining rates of increase in the production of consumers' goods. As mentioned before, this is simply due to the circumstance that the period 1870–1897 happens to lie in what first was a depression and then a recovery phase of a Kondratieff, while the years 1897 to 1913 cover the prosperity and only a few years of the recession phase of a new Kondratieff.

Returning to charts XV and XVI, it seems reasonable to say that the theory submitted is borne out by the behavior of total industrial production,[1] inasmuch as the theory affords a rational explanation of the steadiness of that behavior. For if this theory were not correct, it would be extremely unlikely that longer periods which we identify as nonprosperities should display on the whole at least as high a rate of increase as periods of prosperity, and sometimes a higher one. And if alternative theories were correct which associate increase of output primarily with prosperities and decrease or smaller increase with negative phases, it would be equally unlikely that this should not show at all in the Kondratieff, which so strongly displays the cyclical variations in other series. Even indications pointing to the effects to be expected from our pure model are not entirely wanting. If the reader will draw straight lines through the intervals 1898 to 1913 and 1858 to 1897 on Chart XIV, he will find, as has been mentioned already, that for all three countries the gradient of the first line is smaller than that of the second. And Professor Mills' statement, (Economic Tendencies, p. 244) to be noticed again in our discussion of the postwar period, undoubtedly lends support to the opinion that in the third Kondratieff output actually increased in recession at a higher rate than in prosperity. Something like this seems also to be true of the English index from 1820 (if, on account of the Napoleonic wars and their aftermath it is permissible to begin with that year instead of some date around 1800) to 1842, as compared with 1842 to 1858.

Comparison of the behavior of equipment and of consumers' goods, presented on Chart XVII, brings out, first, some familiar features, notably greater amplitude of fluctuations in the former. But a lead of equipment goods is not particularly in evidence. There is no reason why it should be, if we look at peaks and troughs—consumers' goods may even be expected to recover more quickly from troughs, and this shows in several instances. But even apart from this, lead and lag in the short run are largely, from the standpoint of our process, a matter of chance or rather of peculiarities of individual situations that have little fundamental significance. Disregarding questions of lead and lag, however, the cyclical variation in the relation between equipment and consumers' goods shows clearly enough. It does so especially in the three lines at the bottom of the chart, which are particularly useful for the purpose of

[1] There is really no such thing as a theory of total output as such, in the full sense of the word, for this would imply that we are able to represent it as an explicit and uniquely determined variable in function of some independent variables of the same, *i.e.*, the systematic, class—such as price level, interest rate, quantity of circulating medium. Our whole analysis shows this to be impossible and any theory that attempts it, to be a sham. What we mean above is simply theoretical expectation as to behavior of output within a process that simultaneously shapes all the variables.

studying Juglars. Only the English series, characteristically different from the other two, behaves, if anything, contrary to expectation as to the Kondratieff, and shows hardly anything except a short irregular wave

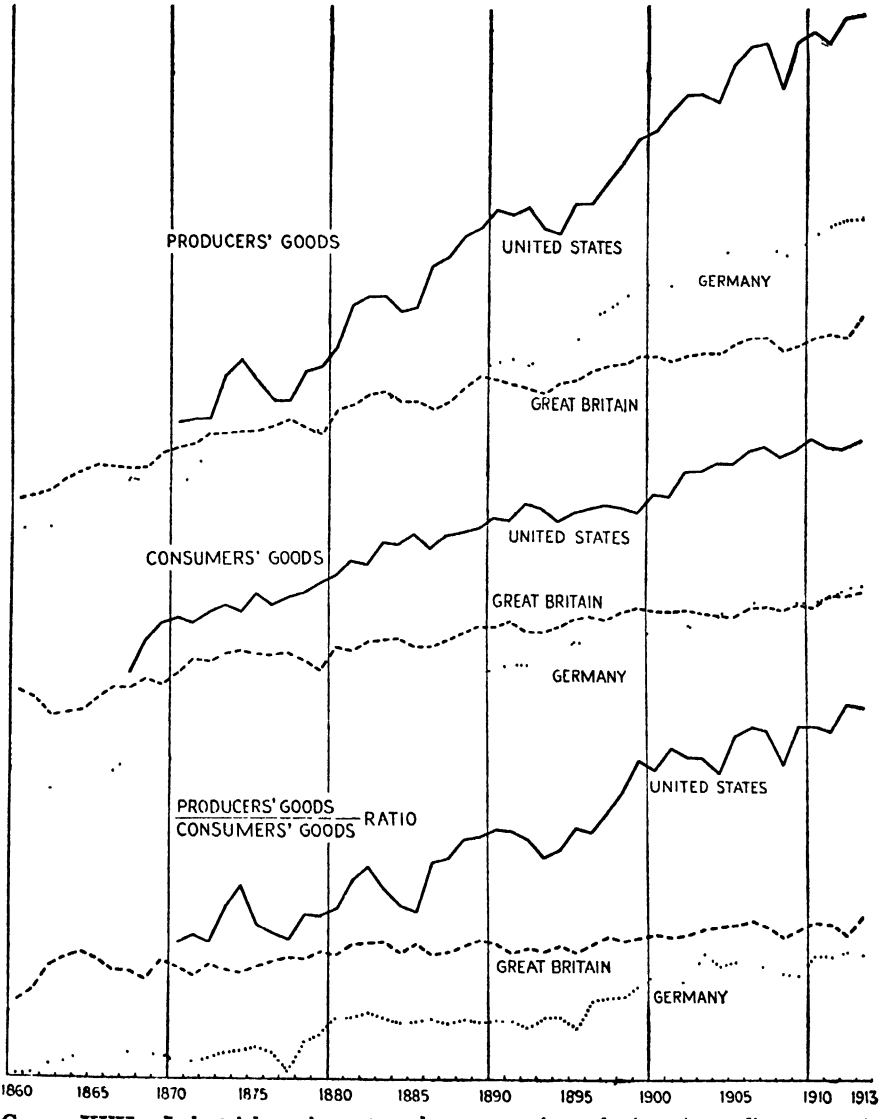


CHART XVII.—Industrial equipment and consumers' goods (see Appendix, p. 1056).

and a trend easily explainable on Boehm-Bawerk's theory. It gives some support to the view that during the period covered the stronger cyclical impulses came to the English organism from other countries.

The German ratio is very interesting. It rises at first through what is distinctly abnormal behavior of consumers' goods at the beginning of the sixties, then goes on almost level (still marking Juglars, however) to 1875, jerks up after a dip in 1877 (which though a year later than in the United States, is yet an early indication of the new Juglar), to continue on the same level or slightly falling to 1894, after which the new Kon-

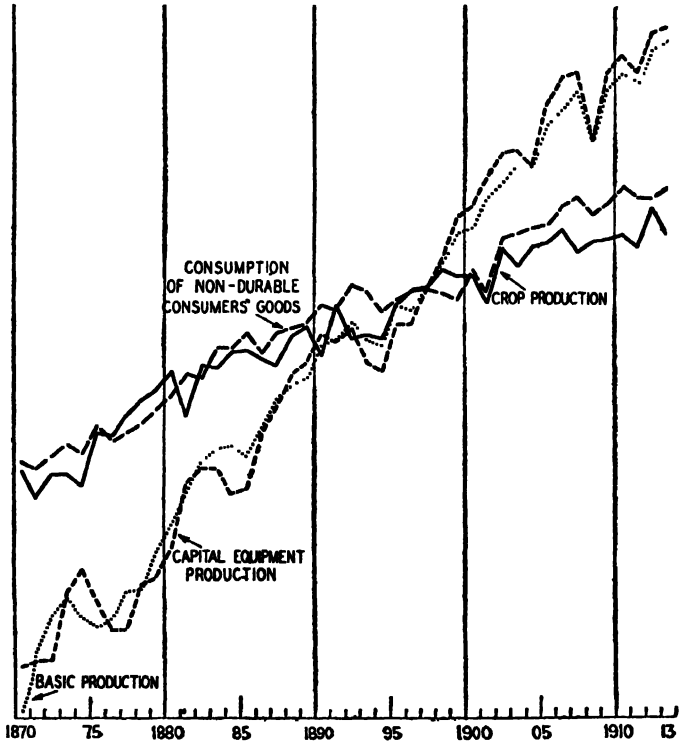


CHART XVIII.—United States consumption and production (see Appendix, p. 1057).

dratieff is exceedingly well marked. The two levels might be associated with depression and recovery phases of the second Kondratieff. The American ratio is the most lively one. It marks the Juglars in the ratio with a clearness that leaves little to desire and even—a point that the reader should verify carefully because there is plenty of room for difference of opinion on this—the Kitchins.[1] The rush to a new level, *which is not lost again*, stands out well at the beginning of the third Kondratieff. Chart XVIII illustrates this still better.

There is some point in comparing, before we leave the subject, variations in output with variations in the price level. We recall at the

[1] The Kitchins can be best observed, for all countries, on the chart of rates of changes.

outset that positive association of the latter with the cyclical phases, or at least three of them—rise in prosperity, fall in recession, and depression -- is normal in the sense that the working of the model tends to produce it, but that we had to qualify that expectation in various ways—notably with respect to the interference of cycles with each other—even within the pure theory of the process. We have now to qualify further by taking account of what has been said about the behavior of output. Nevertheless, the main contour is as required by our schema. The reader should look at the three pulse charts and allow himself to be impressed with the two great result trends of capitalist evolution, the downward trend of prices and the upward trend of quantities, both products of the cyclical process. Although we must not simply attribute the first to the second··· they are both elements in a process that contains many other variables—we may take the picture to represent one of the outstanding features of that process. At least, if business activity be measured by industrial production, it would be patently absurd to associate it either exclusively or primarily with periods of rising price level. We might even use the fact of the fall (both the fall in each Kondratieff downgrade and the resulting secular fall) of the level, together with the fact that media of circulation continued to increase, for a short-cut method of proving—although, to be sure, this would not be quite correct—the proposition that the downgrade plus recovery is the time of harvesting the fruits of innovation in the form of increased output and that given the behavior of the other factors as it actually is—but this is a method of reasoning that the writer always highly disapproves of, if he finds somebody else using it—it is the release of those fruits that turns the price level. Inspecting for instance the British chart, we find level and output rising together, with what we might imagine would, without the French War, have been fairly similar gradients up to 1800 (when output turns within a short cycle before prices), where we suspect the turn of prices would have come without the Napoleonic wars. Prices rise with interruptions to the peak, which in our series comes in 1814; output winds up steadily through its Kitchins. Then prices come down to 1820 (the Kitchin in output that corresponds to the hump in prices in 1817–1818 looking not very different from its predecessors), and output continues to increase in utter disregard of all theoretical argument that has been put forth to the contrary by so many economists. Then prices sweep down—output sweeps up at an increasing rate to 1825 and turns into the crisis of that year before prices. And after that, it continues to increase—if anything, less during the period of rising prices (1849 to 1873) than it did in the preceding period of falling prices. It rises somewhat less than we should expect from 1873 to 1895, but still at about the same rate, in spite of the prolonged fall in prices. And it rises somewhat

more than we should expect, with rising prices from 1895 to 1913, but again at about the same rate.

In the case of Juglars, it happens much oftener that falling prices are associated with dips in output—precisely in depressions or "crises" such as, in England, in 1793 and 1794, then in 1884, 1885, 1886, 1892, and 1893, in 1903 and 1904, and on other similar occasions, though by no means consistently so. Prosperity phases repeatedly rise from falling levels,

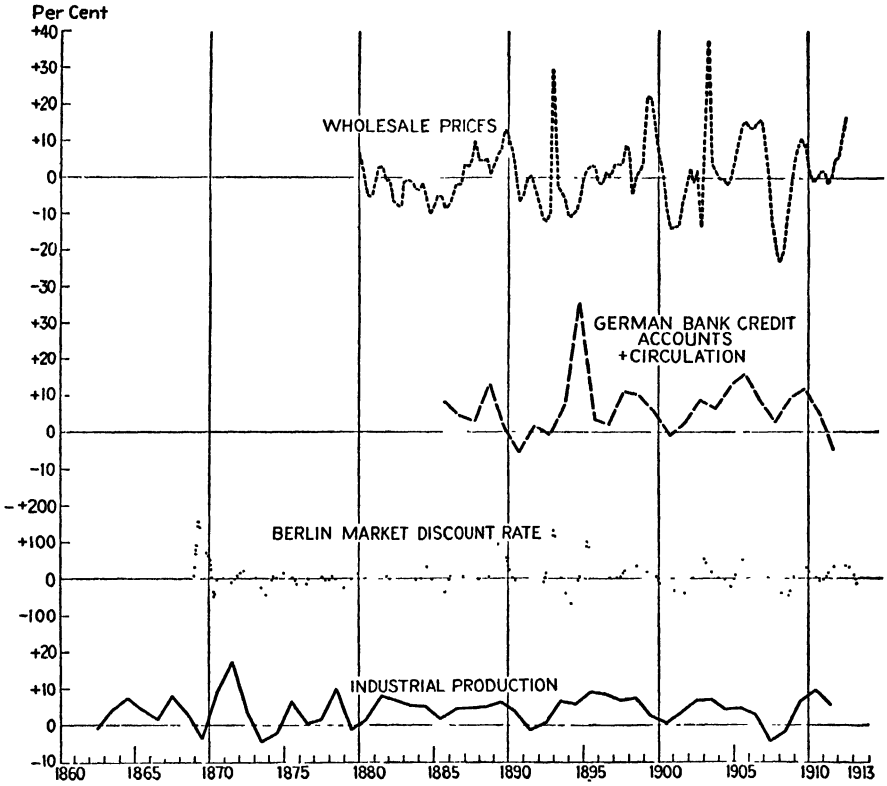


CHART XIX.—German prewar pulse, rates of percentage change (see Appendix, p. 1057).

but only on Kondratieff downgrades, as, for example, the English prosperity of the twenties of the nineteenth century, preceding the crisis of 1825, or the English and German prosperities of the eighties, which, however, proves nothing against the "normality" of increase of price level in prosperities. There is no systematic association of recession with falling output. But in the Kitchins there seems to be: although instances to the contrary are not lacking, the evidence for positive association of output with the Kitchin phases and, on the whole, also with price level, supported as it is by theoretical considerations, is fairly strong.

We present on Chart XIX the rates of change of the series we know already from the German pulse chart. Covariation is much in evidence. It seems to be approximately instantaneous, although rate of change of output displays a tendency to precede.[1]

D. Employment of Labor.—This is the only case of employment of productive resources with which we shall deal. Investigation of the variations in the degree of utilization of natural resources constitutes one of the unfulfilled desiderata of our program. As regards variations in the degree of utilization of plant and equipment, we must, for lack of the kind of information we need for our purpose, confine ourselves to repeating that, the more successfully progressive a community is, the more underutilization or excess capacity of plant and equipment it must, other things being equal, display, both because rapid progress means violent disturbance and correspondingly violent upsets, and because the more rapid the advance, the greater the percentage of semiobsolete and obsolescent plant and machinery will be which is not yet definitely discarded by firms or dropped from statistical lists. Material concerning variations in the employment of labor is very scarce and defective for the whole of the prewar period. For Germany we have indications only —mainly from the nineties on—which may easily mislead. The decennial United States census data are no good for our purpose. The

[1] Professor Irving Fisher (Our Unstable Dollar and the So-Called Business Cycle, *Journal of the American Statistical Association* for June, 1925) has found by the method of lag distribution that maximum correlation between W. M. Persons' index of the volume of trade and variation in the rate of change of the price level is obtained if we lag the former by seven months. If any trust can be placed in this lag, which is, as it were, the center of gravity of the "effects" of the change, and shows the maximum correlation of those indices for the period from August 1915 to March 1923, it would be rather tempting to urge that a lag of that length would, in fact, roughly correspond to the distance, in a perfectly regular Kitchin cycle lying on a Kondratieff downgrade, between the peak of price level (at or near the end of the prosperity phase) and the peak of output (at the end of recession). We will not, however, insist on this. The idea of trying to establish causal connection in this way seems to us a mistaken one. No functions connecting two variables only will ever do in this field. And what covariation there is seems to us much better described and interpreted as an imperfect instantaneous one.

Professor Pigou, Industrial Fluctuations, 1st ed., p. 28, makes the unguarded statement that industrial expansions are "invariably" characterized by rising prices and industrial depressions by falling prices. In order to keep this statement from being less true than the opposite one would be, it must be confined to what Professor Pigou, in fact, calls "normal" cycles, *i.e.*, roughly speaking, Kitchins. It could include Juglars only if we replace "expansions" (*i.e.*, of output) by prosperities. Even so, Professor Persons' criticism in his review, *Quarterly Journal of Economics* for 1927–1938, p. 672, is statistically well founded. But neither seems to perceive the true relation of output to the cyclical phases in prices, or to realize that no expectation can be formed either a priori or from statistical regularity as to lag or lead between output and prices. We quote both statement and criticism because of their methodological interest.

Massachusetts figures, though very valuable in themselves,[1] start only in 1889. We shall in this section use English figures only, taking unemployment percentage as an index of the variations in employment. The figures, which start in 1851, present a sample only—percentage of the number of members of trade unions reported as out of work[2]—and do not take account of part time. They exclude, however, workmen who were idle because of strikes or lockouts or illness or age. The series has been used and compared with others (such as market rate of discount on three-months bank bills, pig-iron consumption, London clearings, Sauerbeck prices, increase in bank credits outstanding, rate of real wages, consumption of meat, beer, etc.) by Professor Pigou in Industrial Fluctuations. In order to save space, we will replace evidence that we ought to present by a reference to that work, as well as to Professor W. Persons' comments previously quoted.

We have seen that there is no unique or simple relation between employment (number of hours worked per week) and output, and that the latter is not proportional to, or measured by, the former. This is a consequence of the very nature of economic evolution and becomes obvious as soon as some of the conditions for proportionality are stated: production functions would have to be invariant in time and relative prices of factors would have to be constant. Neither can possibly be fulfilled for any length of time, such as the period of a Juglar. But both may be fulfilled approximately in the very short run, for which, moreover, the second need not always be fulfilled, because adaptation to change in relative prices of factors may not be possible within it. This very short run may extend, although it cannot be relied on to do so, to the span of a Kitchin, which will, therefore, in this respect, present a picture different from that of the longer cycles. It should also be observed that total employment or unemployment would in any case be unsatisfactory as an index of business situations, even if figures were as exact as they are rough, and even if it were possible to correct them for all the circumstances that change their significance in time (attitude of workmen to unemployment and to relief, geographical and industrial mobility, length of working day, and so on). For variation in total employment or unemployment is the net result of what actually goes on in industrial regions and trades—let alone concerns—and tends to hide differences, which

[1] For various estimates of employment and unemployment in this country, including those of Berridge, Hurlin, Brissenden, and Douglas-Stinebower, see Professor P. H. Douglas's Real Wages in the United States, 1890-1926, 1930, to which the present writer is much indebted.

[2] Professor Bowley made an attempt to go beyond those figures, to which attention should be drawn. See The Measurement of Employment. an Experiment, *Journal of the Royal Statistical Society* for July 1912, in which paper he also shows why, as a measurement of general employment, our series is anything but trustworthy.

from our standpoint often are what matters most. This may be illustrated by the case of seasonal unemployment, which may be considerable and yet produce but modest seasonal amplitudes, if seasons differ with different industries.[1]

We will now inspect the graph of our series (Chart XX) and at the outset notice the negative covariation of per cent unemployed with the rate of interest (see also Pigou, Industrial Fluctuations, Chart facing p. 28), which stands out strongly and is blurred only by the fact that Kitchins show much more in the graph of the latter.[2] Cases such as the one in 1854, which was obviously due to the dislocations incident to the outbreak of the Crimean War, do not amount to real exceptions. For the purpose of analyzing this picture, we will recall or introduce the following concepts and propositions.

We will call Normal Unemployment the unemployment that would at any point of time exist if the system had already reached the neighborhood of equilibrium toward which it is tending. It comprises the cases of seasonal unemployment which, however, for the reason just mentioned, need not reveal itself completely and which, as pointed out in the first chapter, may display a special trend owing to technological change, such as has in the postwar period occurred in building, or to change in consumers' habits. It also comprises cases of unemployment due to such accidents (for example accidental destruction of factories) as will ordinarily occur, of unemployability (which however we may neglect,[3] since, for England and that period, trade unions were not likely to harbor many such cases) and of unemployment due to change of residence or occupation or job. Finally, we have seen that imperfections of competition or of equilibrium may account for failure of the system to absorb all its eligible workmen. This is the only meaning we can attach to the phrase frequently used in Germany but in a different sense, Structural Unemployment. With reference to this concept of normal, we define supernormal and subnormal unemployment. It will be observed that subnormal unemployment in this sense becomes, outside of the precincts of perfect competition, compatible with a high figure of unemployment,

[1] See Charles Saunders, Importance of Seasonal Variations in Employment in the United Kingdom, *Economic Journal* for June 1935.

[2] For that reason, correlation between the two series would not be very good. Even if the relation be judged by the relative number of opposite year-to-year directions of movements, the result is not particularly satisfactory. But this affords only another instance of the failure of formal methods to work satisfactorily. Everyone will, nevertheless, be struck by the reality of the relation. In this case a smoothing device would suffice to bring it out formally.

[3] It will be understood, however, that unemployability, extending as it does far beyond technically pathological cases, is, for other purposes than ours, not only not negligible but both economically and socially one of the most serious of all the problems of unemployment.

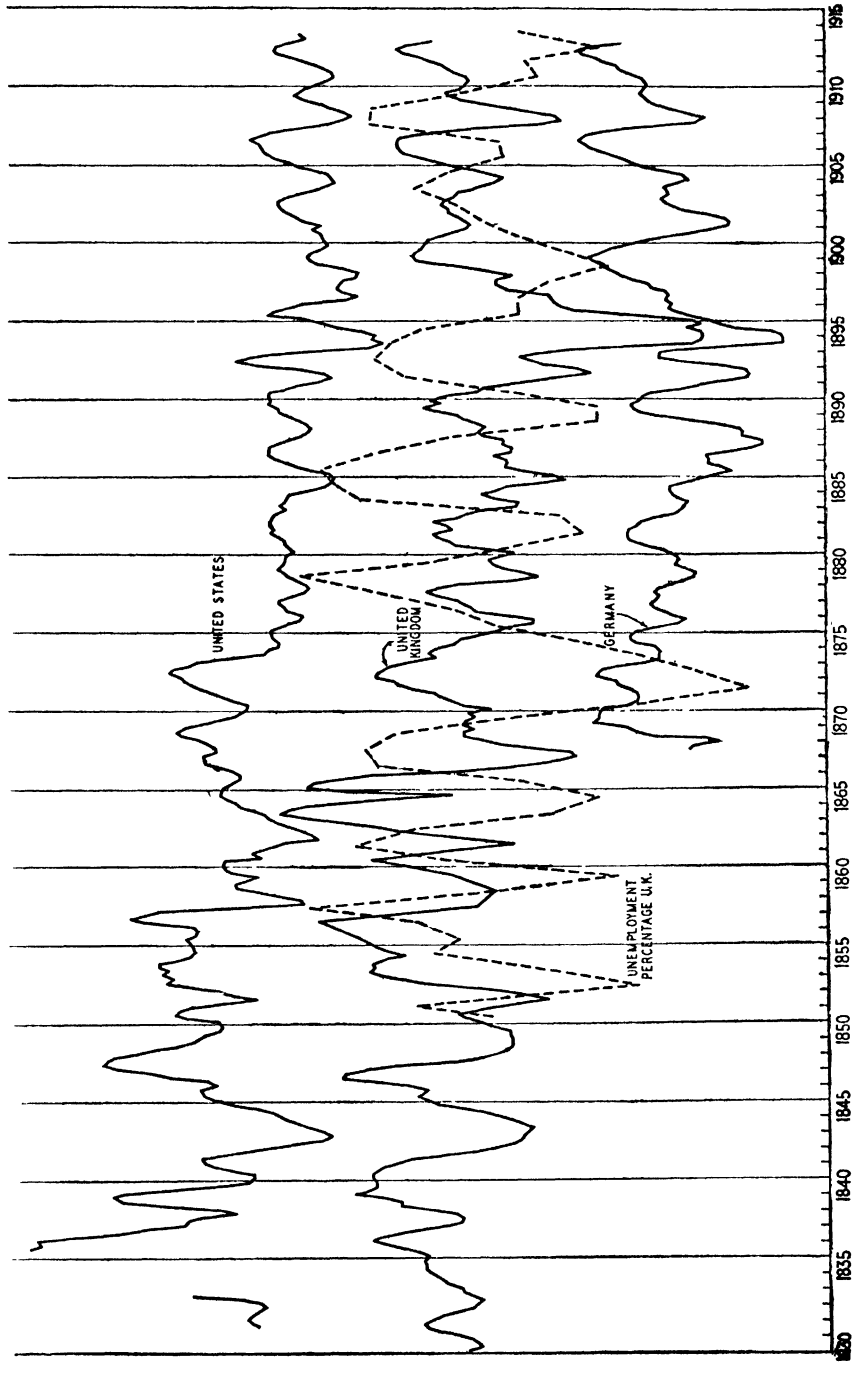


CHART XX.—Interest rates and unemployment percentage (see Appendix, p. 1057).

that is to say, with a state of things in which many people fail to find work that they are both qualified and willing to undertake at the ruling rate of wages. Supernormal employment includes overtime, subnormal employment short time; but, as stated above, neither can be taken account of for our period.

A fundamental difficulty must be noticed, although we cannot do much about it. The various sources that contribute to any given sum total of unemployment are not independent and their effects cannot be separated. In particular, the cyclical process affects them all and cyclical variations of unemployment are affected by them all. This is true also of all types of normal unemployment and even of unemployability; for the question whether a given individual is unemployable or not will be answered differently in times of good business and in times of bad business. Moreover, the same accidental disturbance will give rise to different amounts of unemployment or to unemployment of different duration, according to the cyclical phase with which it happens to coincide and so on. Hence, our concept of a normal percentage of unemployment must not be taken to mean an independent quantity that could be added to equally independent quantities of other kinds of unemployment, but simply the percentage of workers unemployed which would exist in the absence of disturbances of equilibrium. In order to form an idea about its numerical importance, we must first locate neighborhoods of equilibrium: an average of observed values would obviously be quite meaningless. 1897 is a particularly good year to choose since, according to our schema, all our cycles then passed their neighborhoods. The English figure for that year was 3.3 per cent, and we are perhaps not very far off the mark if we consider this value as approximately normal for England at that time.

If, given a state of otherwise perfect equilibrium in a perfectly competitive system, wage rates are raised, say, by public authority, above their equilibrium value, a definite amount of unemployment will, other things remaining equal, ensue, which we will call Vicarious Unemployment. If either equilibrium or competition be imperfect, we may still use this concept to designate unemployment due to deviation of wage rates from the figure at which normal employment would be attained, or—hence our term—unemployment that takes the place of adaptation of wages to that figure. So far the concept is perfectly definite—though it may still be impossible to measure it numerically—and simply expresses a certain aspect of one element of normal unemployment, provided that state of things lasts throughout the period under consideration, or a particular type of supernormal unemployment, if it is but temporary. But we shall also use the term to indicate elements of unemployment that could be removed by an appropriate change in wage rates, *outside of neighborhoods of equilibrium*. And here the concept is, for reasons

that will become apparent in our discussion of the behavior of wages, extremely difficult to handle.

We have above included within normal unemployment such cases as will currently arise from accidents to firms and are analogous to, say, the current rate of deaths by accident. If firms suffer economic injury to a supernormal degree—analogy: deaths from an epidemic—we speak of Disturbance Unemployment. Many instances of the unemployment we observe in the course of cycles obviously belong here. Revolutions or liquidations of wars afford others. From the standpoint of any individual industry, a depressive state in another industry also gives rise to disturbance unemployment. A particularly important class of cases consists of environments in the process of decline from long-time causes external to the system. A country being cut off from its hinterland by the insertion of a new frontier line illustrates what is meant. In this category we include, *when dealing with any single country by itself*, the effects of innovations that develop and run their course outside of it, for instance, the effects of the innovation of new routes of trade on Venice after the sixteenth century, or the effects on modern Europe of the rise of large-scale industry in the tropics.

But for the special case of unemployment arising from disturbance by innovation within the system we will set up a distinct class, to be called Technological Unemployment. This term taken literally, of course, has always been intended to cover only displacement of workmen by machinery. We make it cover a much wider range and include not only the effects on employment of every kind of change in industry and commerce—organizational change, for instance—but also the effects which changes have on employment in firms or industries that are competed with by the firms of industries that introduce new production functions. Questionnaires devised to find out from workmen reasons for their dismissal can, therefore, never bring out the phenomenon we mean and will always yield results that understate it.[1] Yet it should be clear that our wide definition does but justice to the phenomenon, since all it does is to extend the usual meaning of the concept to cases fundamentally identical in economic meaning and causation to the one commonly envisaged under that heading. It is obvious, for instance, that in the case of replacement of a carriage by a motorcar, the coachman will

[1] There is another reason for this. The 1930 Census of Unemployment attempted to ascertain the causes of dismissal of unemployed workmen and, under the heading of Industrial Policy, inserted the technological cause as one of five subheads. According to the answers given, the men themselves must have considered all these five subheads of negligible importance. A little reflection will, however, show that only in a minority of cases will workmen be able to recognize the technological change responsible for their dismissal. For this it would be necessary that machines be introduced in an existent plant under the eyes of the workmen and that dismissal be effected immediately after.

be technologically unemployed even in the narrow sense, although no machine drives his horses henceforth, or that it does not make any difference whether a bookkeeping clerk becomes unemployed because of the introduction of a calculating machine or another rationalizing device, or whether a cotton picker becomes unemployed because of the introduction of a cotton-picking machine or because cotton is being eliminated by the competition of the standard fiber. Since every kind of unemployment will induce further unemployment, Secondary Unemployment in Mr. R. F. Kahn's sense must be added to each.

Now, a large majority of economists will agree in believing that vicarious unemployment contributes something to the total by which unemployment varies in the course of cycles (Cyclical Unemployment), although they do very much disagree about the importance of that contribution. Our own views about this will be developed in the discussion on the behavior of wages. All economists will agree to the statement that disturbance unemployment contributes much. Panics, spirals, prosperities which facilitate the emergence, and recessions which facilitate the breakdown, of fraudulent or ill-conceived enterprise, and all of the phenomena that produce the rise and break of the Secondary Wave amply account for that. As far as these points go, all we have to add is that such phenomena would follow from the working of the cyclical mechanism, whatever the behavior of money and credit, although autodeflation accentuates them and their effect on employment. But few, if any, economists realize the one major point that the writer wishes to make. They have a habit of distinguishing between, and contrasting, cyclical and technological unemployment. But it follows from our model that, basically, cyclical unemployment *is* technological unemployment. For vicarious and disturbance unemployment are, in the main, but understandable incidents, though quantitatively important in practice, which we could abstract from without thereby blotting out any essential contours. Technological unemployment, however, is of the essence of our process and, linking up as it does with innovation, is cyclical by nature. We have seen, in fact, in our historical survey, that periods of prolonged supernormal unemployment coincide with the periods in which the results of innovations are spreading over the system and in which reaction to them by the system is dominating the business situation, as, for instance, in the twenties and in the eighties of the nineteenth century.

It further follows that, like profits, technological unemployment is ephemeral. It might nevertheless be ever present, but, as in the case of profits, every individual source of it in the industrial organism tends to exhaust itself, while new ones emerge periodically. In the same sense as profits, moreover, it may be called frictional, since instantaneous

adaptation of the system would kill it at birth. The reader need not fear that the writer harbors any intention of using these statements in order to minimize the importance of the phenomenon or the sufferings it inflicts. But it should be noticed that, in consequence, the primary long-run interest of the working class is in the effects of innovation on the total real wage bill and not in the incident variation of employment, which is but an element of the mechanism that produces the changes of the former and can be separately handled by public policy.

We now proceed to apply this analysis to the task of explaining the behavior of our series. Unemployment is one of the primary elements of our process and, though entirely consequential, also, like everything else, a conductor of effects which exert secondary causal influences of their own. The series is natural, systematic, and obviously also cyclical. But our theory does not suggest any reason for expecting any result trend *in unemployment percentage.* We have before us one of the two instances, among the major elements of our statistical picture, of clean cyclical series, the other being the series of interest rates. The reader should carefully reconstruct, from the fourth chapter, every step of the reasoning that leads up to this statement. Absence of trend in percentage of unemployed workmen would mean, in the case of a population constant in number and age distribution, that the process of evolution works in such a way as to absorb all the cyclical unemployment it creates, technological and other. If net increase in number of population (natural increase minus emigration plus immigration) fails to produce a rising trend, this means that the system also absorbs the current increment at the same terms, *i.e.*, subjecting it to the same unemployment percentage. Absorption of emigrants from the agricultural sphere belongs to the first and not to the second class, even if those "emigrants" were proprietors before, or for other reasons not technically unemployed.

A glance at the chart seems in fact to verify this result. We observe no obvious trend, and it is clear that any trend that could possibly be derived by formal methods would be too weak to be significant, particularly if, recalling what has been said about the untrustworthiness of individual extremes, we do not attach much importance to the peaks that occur in 1858 and 1879. It is no doubt true that our statistical data cannot be relied on implicitly. Among other things, trade-union figures do not reflect juvenile unemployment and the variations of the delay in getting first jobs. Unemployment among unskilled and unorganized workmen may have behaved in a different way. Some absorption could have been expected to occur from the mere effect of such saving as might have occurred irrespective of our process. Moreover, institutional changes, insertion into the system of additional permanent rigidities, emergence at any time of imperfections that had been absent before—for

instance, of the oligopolistic type—could have produced a positive trend, their elimination a negative trend, so that the basis of our theory and the basis of our statistical finding are not simply congruent. But it is not likely that such factors should have combined exactly so as to produce a spurious verification of our thesis, or that fuller information would substantially affect it beyond showing up a number of particular deviations due to particular causes.

As we shall see, cyclical unemployment has within the epoch under survey been absorbed at increasing rates of real wages. It is this fact that lends importance to both our result and our observation, which would become trivial if absorption had been brought about by downward revision of real wages. For the moment, however, we will merely notice that, exactly as unemployment may be vicarious to a fall in wages, so a rise in wages may be vicarious to an increase in employment. As in the former case we can, theoretically at least, express an increase in unemployment in terms of the equivalent fall in wages that would prevent it, so we can in the latter case express an increase in wages in terms of an equivalent increase in employment which is only virtual, of course, since there was no corresponding labor force in existence. Thus reducing the long-run effects of the cyclical process on wages to effects on virtual employment, we arrive at a negative trend in percentage of virtual unemployment, while, if absorption had been brought about by a fall in wages, the trend of virtual unemployment would be positive.

Expectations as to the cyclical behavior of the unemployment percentage are too obvious to be restated. If a cycle started from perfect equilibrium in perfect competition, increase of employment in prosperity could show only by overtime if at all. As it is, it partly shows by overtime—hence, imperfectly in our series. The unemployment of deep depression will be as irregular as everything is in that phase. It will also be, owing to the preponderance of what we have called disturbance, of a sufficiently distinct nature to warrant a distinct name: Depression Unemployment. Revival should bring employment up to normal and actually does so more frequently than observers assume who neglect the long list of factors that swell the size of normal unemployment. There seems to be no theoretical reason why variation in total unemployment should be a particularly early symptom, but in a majority of cases it actually has been. Covariation (mostly negative) with all other cyclical series is, of course, to be expected; but we should always keep in mind that this must not be interpreted to mean either coincidence of variations or any consistent leads or lags. Economic life is not so regular as that.

The formidable unemployment of the depression phase of the second Kondratieff shows up well, as does the different state of things in the prosperity of the third. But considering the nature of the phenomenon,

we shall not be surprised to find that it is not so easy to draw two lines of different gradient through the two Kondratieff sections of the material as it is with other series. The Kitchins show but little. This also is perfectly natural—observe the contrast with the Kitchin fluctuations in interest—considering the importance of the technological component, which cannot act strongly within their span, and perhaps in part explains why most students who by business cycles primarily mean Kitchins so persistently divorce cyclical from technological unemployment. For the same reason, the violent movement of our series in the Juglar rhythm is what we should expect. For clusters of innovations, or "steps in evolution," assert themselves most obviously through Juglars, as we may also verify by reference to the behavior of the pig-iron series. While it is interesting to note that, as a rule, each of them tends to absorb the unemployment of its own creation, nothing can, of course, be inferred from this about the average duration of the period during which the unemployed individual is actually out of work. This question has been investigated for the postwar period,[1] but it does not concern us here.

With the exception of the twin peaks in the sixties, which are easy to understand, there is one peak to about every nine years. Unemployment above 6 per cent occurs in 16 out of 64 years, and centers, except in the cases of 1862 and 1879, in Juglar depressions. But it is not coterminous with them, lasting longer than they did in three cases (at the end of the sixties, in the eighties, and in the early nineties), while in several years which clearly belong to depression phases, that figure was not reached. Except in the eighties, unemployment never went beyond 8 per cent for more than one yearly figure. This happened in 1858 and 1879 (neglecting again 1862) and was more than made up for in the subsequent year. Location of the latter peak, at the threshold of prosperity, is particularly abnormal. Although there is no theoretical reason to expect even as much regularity of amplitude as there is, it may be safely asserted that in any unemployment percentage beyond 6 per cent spirals and so on counted for much more than did the direct effect of innovation. Troughs, except the one in 1872, display a habit of not going beyond, or just stopping short of, 2 per cent, which, even apart from the historical fact that they were associated with overtime, would, according to our guess, already spell supernormal employment in our (not merely the statistical) sense. The writer knows of no evidence, that in the epoch

[1] See D. Weintraub, Displacement of Workers by Increase in Efficiency and Their Absorption by Industry, 1920–1931, *Journal of the American Statistical Association* for December 1932. The reader's attention is called to this important piece of work, which by a much more elaborate method arrived at results that are believed, if account be taken of the conditions of the postwar period, substantially to support our conclusions, in spite of the failure to connect displacement and absorption with the causation of cycles. We shall return to this in the last two chapters of this book.

under survey vicarious unemployment played any major role. Correlation between unemployment and wages corrected for price level proves nothing.[1]

[1] For the unemployment problem of postwar times M. Jacques Rueff investigated that correlation. On this, see Professor Pigou's analysis, Theory of Unemployment, Chap. X. In Industrial Fluctuations, Part I, Chap. XXI, he presents the case against causal interpretation of such covariations so forcefully as to make it superfluous for us to argue the case.

CHAPTER X

Prices and Quantities of Individual Commodities

A. Prices and Quantities of Individual Commodities (Including Services).—These should always be studied together. Taken by itself, neither price nor quantity conveys its full message or in fact any that is definite, and each must be interpreted in the light of its companion. In general theory and its statistical complement, this has of course always been recognized. Students of cyclical variations, however, have sometimes attempted to deal with price variations alone or with quantity variations alone.[1] But the true heroes of the play and the true variables of the problem are the price-quantity pairs or points.[2] Their behavior

[1] The above is, however, not intended to convey adverse criticism of such invaluable works as F. C. Mills, Behavior of Prices, 1927; G. Tintner, Prices in the Trade Cycle, 1935; or A. F. Burns, Production Trends in the United States since 1870, to which, on the contrary, the writer wishes to acknowledge heavy obligation, and which he strongly recommends to the attention of the reader. S. S. Kuznets' Secular Movements in Production and Prices, 1930, is essentially a price-quantity study and so is a book that in some respects may be considered as a forerunner of much of the later work in the field and keeps, theoretically and statistically, a very high level, although it cannot be said to coordinate the theory of its first part with the statistical investigation that forms its second part.—Marcel Lenoir, Étude sur la Formation et le Mouvement des Prix, 1913. For price dispersion, in particular, compare M. Olivier, Les Nombres Indices de la Variation des Prix, 1927, and O. Lange, Die Preisdispersion, 1932. Of course, the whole of the huge literature on price analysis, although as yet almost unconnected with specifically cyclical problems (the greatest of its shortcomings and the one most urgent to remedy) really ought to be cited here. The reader finds a useful guide in the survey of a number of the most significant contributions presented by L. O. Bercaw, Price Analysis, in *Econometrica* for October 1934. The contributions of Henry Schultz, M. Ezekiel, and W. W. Leontief should be particularly mentioned. See also E. J. Working, Demand Studies in Times of Rapid Economic Change, and H. Working, Differential Price Behavior as a Subject for Price Analysis, *Econometrica* for October 1935. There is also a mimeographed bibliography compiled by the Department of Agriculture group. C. F. Roos, Dynamic Economics, 1934, breaks new ground in various directions. Warren and Pearsons' book on Prices is also relevant to the study of individual prices. See also the *Cornell Agricultural Experiment Station Memoir* 142. This note is of course but a fragment, but it is believed that it gives enough references for a start.

We shall not insist again on the factual difficulties (as distinguished from difficulties of interpretation) inherent in the material, which become truly formidable in the case of even the simplest finished commodity.

[2] Such a point (x, y) can be represented by a complex variable, $x + yi$, or as a vector

is the very heart of the cyclical mechanism. Again a vast research program opens before us into which we cannot enter. We must confine ourselves to offering the following comments, which are mere applications and exemplifications of the analysis of our second and fourth chapters.

1. We will begin by recalling what has been said on the subject of Group Prices. Most of it applies also to the behavior of price-quantity relations of individual commodities. Only it does so with much greater force because individual peculiarities must relatively increase in importance as we proceed from textiles to cottons, from cottons to cotton wearing apparel, from this to cotton shirts, from cotton shirts to men's cotton shirts, and from these to brand X of firm Y. Again, we may conveniently, though somewhat artificially, class variations into those which are directly caused by innovation (and these in turn into the price-quantity variations of the commodities in the production of which innovation has occurred, innovating commodities as we call them, and the price-quantity variations, induced by innovation, in their rivals and subsidiaries) and those which are simply responses to the general business situations that result from the particular disequilibria created by innovation. It is with the latter class that such statistical uniformity as there is must rest. And in fact the impress of cyclical phases is in the large majority of cases clear enough, although not so strong as students expect who have acquired, from an aggregative view of the cyclical process, a habit of mind for which any deviation is in the nature of a discovery to be wondered at. But every industry or even concern has a structural pattern of its own and is at every point of time faced by an individual set of environmental conditions that determines its reaction. Hence if we observe that the price-quantities of an industry behave differently from those of other industries, this is no reason for concluding that different forces must be acting upon them or that they have (in any but a formal sense) a special cycle of their own, or for denying the reality of the "general" cycle.

There is much danger of misinterpreting statistical findings in that sense, especially if we refuse to recognize the traces of the cyclical process unless they display sufficient regularity to reveal themselves to formal methods of measurement. The reader should therefore realize from the outset that there is no warrant for this attitude and that expectation from our model is not for uniformity but for what we actually find, great variety[1] of amplitudes, periods, and sequences that does not tell in the

since complex variables may be geometrically interpreted as vectors from the origin. Professor W. W. Leontief's important paper on Price-Quantity Fluctuations in the Business Cycle (*Review of Economic Statistics* for May 1935) seems to the writer to open up a most promising as well as novel line of approach.

[1] "Dispersion graphs" on which lines representing prices or quantities on a time scale are made to coincide for the first year are useful to inspect in order to get a first impression

least against the presence of an all-pervading movement and does not spell theoretical, although it does spell statistical, irregularity. He should train himself to look upon every industry as a resonator exposed to the impact of a force and responding to this impact according to its structure. These resonators are differently affected by each individual impact, although it is always the same process that impinges upon them, and they would, because of this, respond differently, even if they were equally constructed. But they are not and hence would respond differently even if equally affected. It follows that lead or lag of individual price-quantity pairs as compared with price level or total output, as well as compared with other price-quantity pairs, has but little significance for the causation and mechanism of the cyclical process per se.

2. We may still schematize, however. And first we will attend to the behavior of the price-quantity pairs of industries which, in the sense of the above distinction, are not innovating ones or close relatives to these. That distinction is not easy to carry out in any actual instance because, as we know, innovation jumps from industry to industry, and intrudes into every one of them at some time or other. But it has some expository virtues. It is convenient, moreover, to start with cases that approximate the competitive schema.

The impact of the cyclical sequence of business situations on such industries is by way of enterpreneurs' expenditure and expenditure induced by it. Effects may be decomposed into nominal and real ones. By the first we mean effects on prices and costs that cancel each other and by the second, effects that do not. Although it would mean eliminating the very essence of our process if we adopted the hypothesis that that expenditure so acts as to affect all values in equal proportion,[1] part of what actually happens does answer to the pattern of such a purely nominal alternation of "inflation" and "deflation," which should induce neither expansion nor shrinkage of output, and in fact explains why variations of prices have, in all phases of cycles, much more in common than have variations of quantities. There is some point, therefore, in correcting commodity prices by an index of the level, though the defects of these

of that variety. See, for example, the charts on pp. 12 and 13 of Professor Irving Fisher's The Making of Index Numbers. The picture is, in its pedagogical value for general purposes, somewhat injured by the fact that it covers the years of the World War. Quantities are seen to be even more individualistic than prices. For a picture of average rates of change in prices (Professor Mills calls them "trends") see F. C. Mills, Behavior of Prices, p. 68. The graph has the virtue of starting not too far from a neighborhood of equilibrium and of illustrating a Kondratieff prosperity. What might be termed a modal behavior is discernible.

[1] In that sense it is of course true that there is no "one-to-one relation" between any single price and the price level, and that in any multiple correlation analysis price level should, hence, be explicitly introduced as one of the independent variables.

indices make it a hazardous operation. This has been done by Mr. Carl Snyder (Structure and Inertia of Prices, quoted before, p. 192 for the

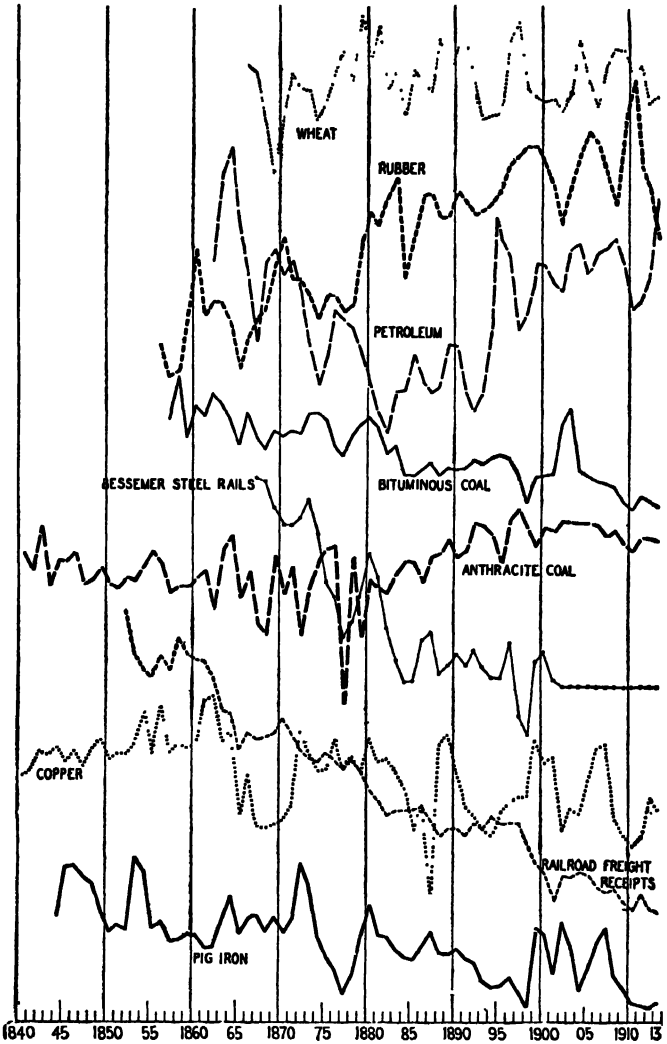


CHART XXI.—United States individual prices deflated (see Appendix, p. 1058).

United States, and p. 194 for Great Britain). He, however, seems to claim for the results an absence of long-time tendency and a covariation, which not everyone will be able to see.[1] Chart XXI will convey an

[1] However, a tendency to covariation may be said to exist also in the deflated figures. But our version, both of this finding and of the covaration of undeflated figures, may be given in the form of an answer to Mr. Snyder's question as to what mainly determines prices: the cycle.

impression that suffices for our purpose. With some obvious qualifications, variations in the sum total of money wages would, *under our present hypothesis*, reflect those variations, both in costs and receipts, which would cancel out from the standpoint of the firms and the wage earners themselves. In reality they cancel out to some extent and, so far as they do, we have no difficulty in taking account of the cyclical element in an ordinary Marshallian demand or supply curve by introducing, say, the wage bill as a parameter that will make it shift in the requisite way.[1] From the standpoint of some theories of the cycle, this is in fact all that would be needed.

3. But as we know, increase and decrease of expenditure do not act in the way just envisaged but so as to produce shifts of "purchasing power" between households and shifts of relative receipts and costs between industries and even firms. There are, therefore, real changes to which to respond and this response is, with but minor qualifications, uniquely determined in the competitive case. Only, determinateness does not mean that every industry and firm will respond in the same manner. It will do so—and the analysis of the second chapter prepared us for this—according to its structure and its situation at the moment. By structure we do not only mean the technological and commercial setup—including the lags inherent to it—and the organization of the industry—such as its relation to, and the behavior of, its wholesale and retail trade[2]—but also the nature of its products—for example, whether they are subject to rapid change in fashion, readily variable, easily storable, or not—its financial habits, the support it can expect from its financial connections, finally, the mentality, the promptness, and particularly the horizon, of its managerial personnel, its aversion to dismissing workmen, and the like. A most important point is the policy of its firms with regard to stocks, for, given the possibility, producers will in general "speculate" in their own product. Data about carry-over of stocks being exceedingly scarce for prewar times (although valuable indications might be unearthed), we have no choice but to neglect this element of cyclical price-quantity fluctuations.[3]

[1] If we take a linear demand function (entirely inadmissible and even absurd though it is) that expresses quantity (virtually) sold, y, in function of the price x and the "catch-all" time, $y = a - bx + ct$, we may either interpret the last item to mean cyclical variation of the kind discussed above and replace it by cw, w meaning wage bill, or we may leave ct for other "trends" and let a vary in function of w, in this case simply as Kw, K being a constant. Of course we can in *this* case also correct for price level and then use the original equation.

[2] The very different attitudes of retailers toward their margins may be cited as an example. As a rule, these margins are not rigid, but in some branches they are.

[3] It is, however, not too hazardous to draw conclusions from postwar material. The study of R. H. Blodgett, Cyclical Fluctuations in Commodity Stocks, 1935, and various

Behavior of price-quantity pairs also depends, at any moment and during every individual cycle, on the actual situation of each industry and firm at that time and in principle on all preceding situations. What we mean by situation would be very easy to define if we could start from perfect equilibrium. But this is precisely what we cannot do now. We must start from the second approximation of the fourth chapter and take into account all the underemployment, all the sloppiness, all the effects of indebtedness, all the undigested leavings of previous phases, all the imprints of chance events peculiar to the industry under study, that may be present and account for the diversity and the timing of its response. Cycles may then be skipped or there may be what to the statistician will look like special cycles, although the industry may be reacting to nothing but "the" business cycle itself. The moral of the story is that only analysis of the history and state of an industry will explain the behavior of its price-quantity pairs. Unless research into the facts can proceed on these lines it is useless, and we might just as well confine ourselves to stating our theoretical expectations, for the statistical graph will not tell us more than they.

4. However, these are only qualifications, although important ones, of the broad truth that noninnovating commodities which are produced either under conditions of perfect competition or under conditions which, even in the absence of technically perfect competition, enforce similar results will display cycles in prices both relatively promptly and relatively strongly and hence, on the whole, tend to fluctuate less in quantity, unless typically cyclical in nature. In order to verify this we need only glance at the constituents of some of the indices of sensitive prices. The Snider-Persons index of 22 commodities (1875–1889), the Harvard Economic Society index of 13 (from 1923), and another Persons index of 10 commodities (1890–1922)—for all of them see W. M. Persons, Forecasting Business Cycles—list beans, barley, burlap, coffee, cottonseed oil (refined), cotton sheetings, coke, copper (ingots), corn, corn meal, hides, hogs, lard, oats, pig and bar iron, pork, print cloth, rubber, rye, shellac, silk, spelter, steel scrap, tallow, tin, tin plates, tobacco (leaf), tur-

investigations of the Berlin Institut für Konjunkturforschung (for example, the article on Lagerhaltung in the *Vierteljahrshefte*, 1928) are particularly suggestive. To the late Professor Laurits V. Birck of Copenhagen is due the idea, the present writer believes, of making it a criterion of cyclical situations *where* stocks are primarily held—with producers, wholesalers, retailers, or ultimate buyers. The pure theory of the subject is largely the work of Professor Tinbergen. Mr. Blodgett's results amply bear out the expectation that, owing to the variety of individual situations and of relevant considerations, behavior as to the holding of stock must differ widely between industries and firms. For instance, stocks in goods that are perishable or subject to fashion will of course be positively associated with cycles, stocks which are due to inability to sell and to the difficulty or costliness of varying the rate of production, negatively.

pentine, wheat, wood screws, wool, worsted yarns, zinc. Hemp adorns a corresponding German list. As the reader sees, the expectation of finding those commodities, which according to some theories are particularly allied to cyclical processes, is not entirely disappointed. But agricultural articles, the standard examples of almost perfectly competitive conditions, predominate. They would do so still more were it not for two circumstances. First, though prices and quantities of all of them are of course strongly influenced by chance variations of crops, some are more than others. Potatoes, for instance, are dominated by this factor much more than wheat (see H. L. Moore's highly satisfactory demand curve for potatoes in Economic Cycles, p. 76, which fits well, in spite of the extreme simplicity of the assumptions underlying its construction — the price of wheat, for instance, shows much more the influence also of other factors). Second, the purpose of deriving a sensitive index which precedes the index of the general price level, disqualifies others the prices of which, like that of milk, display the influence of the cycle all right.[1]

[1] Professor Mills accuses barley, beans, corn, rye, wheat, and many others of irregularity. This is, of course, a correct formulation of the results of applying his measurements and his reference schema of cyclical movements. Others (26 in all) he classes as "exceptional," excluding them altogether. But his warnings, *op. cit.*, p. 102, as to the interpretation of Table XV in his Appendix (and others) are but too justified. It might be added that those results afford a good illustration of our view about such measurements. If irregularity of behavior be interpreted to mean (for example, p. 553*n*.) that the prices of commodities so designated "do not conform in any systematic fashion to the cyclical movement of general prices" and, we suppose, "exceptional" behavior to mean irregularity too great to be borne with, it seems tempting to infer that the price-quantity behavior of such commodities is independent of the cycle or contrary to the cyclical schema. This, of course, Professor Mills does not mean, and it would be completely false. That some of them could ever have been drafted for service in an index of sensitive prices and that they served better than pig iron, is in itself sufficient to refute it. Another argument is afforded by eggs and butter, also classed as irregular, and poultry, which is voted exceptional. Eggs, butter, poultry, as well as all the meats, classed as regular, beef, pork, mutton (the writer is not sure about veal) display in their price-quantity behavior as close a relation to wage bill as we can expect, taking account of the structure of these "resonators." Again we must for this statement mainly rely on postwar data. The wholesale price of butter moves inversely to Federal Reserve Board Pay Rolls in 1927, but otherwise covariation prevails. The gross Farm Value of Poultry and Eggs, as estimated by the Department of Agriculture, goes well with Pay Rolls. Action of variation in consumers' expenditure through wholesale prices on farm prices is comparatively quick in all cases. See, for example, United States Department of Agriculture, report on hog situation to United States Senate, Feb. 9, 1933, which, though dealing with postwar fact, may still have application to our period: "total consumers' expenditure for pork apparently is determined largely by the level of consumers' incomes. Consumers' expenditures for a large supply of pork are about the same as for a small supply if consumers' incomes remain constant." The same is approximately true of the other articles mentioned. To be sure, this will result in a variability of price which may look irregular in the sense alluded to, while, as a matter of fact, it would be difficult to find much stronger instances of response to cyclical impulses. Similar remarks apply to some of Mr. Tintner's measurements. He states, for instance, *op. cit.*, that German metal

The nonagricultural articles call, in this connection, for only two comments: cotton sheeting, print cloth, and worsted yarns are not in the least less sensitive than pig iron or copper. And wood screws are particularly interesting as an article the Marshallian elasticity of demand for which must be extremely small and the production of which is carried on under conditions certainly far removed from perfect competition. Professor Mills gives 40.2 months for the average duration of its Kitchin (*op. cit.*, p. 545, No. 291; bar iron, No. 267, has 39.1).

This is not to deny that a more intensive study of periods, amplitudes, and relative phases (timing) may yield results that reveal cyclical causations. It is not uninteresting to note, for instance, that metal and metal-product prices and quantities indicate Juglars much more clearly than Kitchins (so, however, do pepper and flour, also freight rates[1] and some chemicals; see Tintner, *op. cit.*), and that foodstuffs and raw and semi-finished textiles and textile machinery do the reverse (as, however, also do other chemicals and timber). But no simple generalizations are possible and no formal methods of analysis are satisfactory. As stated above, this entirely conforms to expectation from our model. For the study of demand and supply it means that Marshallian curves fail beyond remedy. In specially favorable cases we may still split the actual movement into a movement, say, *along* a demand curve, and a movement *of* the demand curve. The potato case cited affords an instance in which the first so dominates that, for quiet times, we can derive what looks like a plausible Marshallian curve. Even there it does more to obscure than to elucidate the real course of events. The cases of iron, steel, copper, and other commodities of that class afford instances in which the second so dominates that we get H. L. Moore's positively inclined demand curves, which, as is universally recognized now and as was eventually recognized by Moore himself, are no demand curves at all, but paths of cyclical shift within a family of demand curves, each of which is still negative to the quantity axis. But to reason as if cyclical variations of quantities supplied or demanded were movements along any invariant curves is obviously inadmissible and, as will be seen in later chapters, at the bottom of many faulty arguments about wages, interest rates, and prices of capital goods. It is no less inadmissible to assume that, while shifting, the forms of those Marshallian functions

prices show small response to the cyclical rhythm. His method yields this result. But the reader should look for comment to the chart on p. 96 in the price study, quoted before, of the Berlin Institut für Konjunkturforschung. Such procedure makes it still more difficult to segregate the cases that really present difficulties of interpretation, such as tea, which the present writer entirely fails to understand (see Mrs. Gilboy's articles on Time Series and the Derivation of Demand and Supply Curves in the *Quarterly Journal of Economics* for August 1934).

[1] (English) prices of secondhand ships move particularly well in the Juglar.

are invariant to cyclical phases. This is much more important than are many of other objections usually raised against the use of "classical" analysis in this field.

B. Special Cases.—Recent work has gone beyond those limits. Rate of change of price,[1] the influence of past prices,[2] and a number of collateral circumstances have been taken into account (Evans, Roos, and others. See for a survey of formulae sufficient for our purpose, and for a highly instructive application to steel, R. H. Whitman, The Statistical Law of Demand for a Producers' Good, *Econometrica* for April 1936). The problem of the influence of variations in real income has been analytically taken care of by the Pareto-Slutsky-Schultz theory (see the latter's paper in the *Journal of Political Economy* for August 1934). Multiple correlation has lent its aid for advance in similar directions (Ezekiel, Bean). Reaction of consumers to change in price and income has also been the subject of a League of Nations investigation (see on part of that project, Mr. H. Staehle's article on the behavior of immigrants into the United States, *Econometrica* for January 1934). Some of the results of all those and similar endeavors directly fulfill our desiderata. Others are readily adaptable to the purposes of the study of cyclical behavior and in fact may be improved by borrowing from the theory of cycles. All break down when production and consumption functions ("methods" and "tastes") change, as they unavoidably do eventually. But for most commodities they, particularly the latter, remain constant for considerable stretches of time. Any change that occurs by way of innovation or induced or autonomous change in taste must be located historically. In some cases it shows in the statistical material, which, however, must never be relied on to indicate explanation unequivocally. Had we nothing but a historical graph of quantity of products from the soil, we might easily be tempted to interpret its form in the sense of decreasing returns, absurd though that would be.

[1] Professor Evans was, as far as the writer knows, the first to introduce rate of change of price explicitly into the demand (and supply) functions. The simplest way of doing it is to add an item of the form $h\dot{p}$, h being a constant and $\dot{p}$ being the time derivative of price. See, for example, his Mathematical Introduction to Economics, 1930, and earlier papers This may be interpreted as a way of taking account of anticipation. We shall use this idea later on in another connection. That it works with speculation in agricultural commodities has been shown by investigations of the Department of Agriculture group.

[2] If we treat quantity as a function of, among other things, past prices—say, an average of the prices of the preceding five or six years—we may mean either that the capacity adjusted to those prices will persist for a time or that people really intend to react to those past prices. Formally, this makes no difference; but it follows that, if we observe that farmers react in a way which may be amenable to interpretation in the latter sense, we must not from this alone infer that they really mean to do so.

We may take another step without leaving the precincts of our present hypothesis of (more or less) perfect competition, although the element of innovation will occasionally intrude. Of the reasons why fluctuations of price-quantity pairs of a commodity may fall out of line, in a manner not explicable by the cyclical mechanism without taking account of the facts of industrial structure, technological lag is one of the most important. To some extent it is ubiquitous, particularly if we include adaptation by construction or reconstruction of plant. But we will confine ourselves to a few outstanding instances. Coffee is one.[1] We shall expect and actually find in the series of its price-quantity pairs traces of the time shape of the yield of coffee trees. The American price —we deal with Brazilian coffee and the United States market only—varies fairly closely with the Kitchin phases (average duration for 1890 to 1925, according to Professor Mills, No. 109, 37.6 months), but all the longer movements are entirely out of step moving under the obvious influence of enormous waves of new planting. New trees begin to bear after from four to seven years, after which their yield varies with weather conditions and the exhaustion of trees after bumper crops. Such a wave pulled the price down to a trough in the middle eighties and again, after spectacular rise to the early nineties, at the beginning of this century.

Interpretation is not difficult but complex. It was a case of innovation, and of an article forcing its way into consumers' budgets and inducing a change in taste: per capita consumption increased systematically to about 1902, obviously not only in consequence of increasing wealth, as we may infer from a comparison of the changes that occurred in the relation between coffee and tea consumption in this country and England. Production being mainly for export, international influences caused a deviation from standard patterns. But the process was further distorted by monetary disorders in Brazil, which frequently put an additional premium on production, and by the policy of government, which subsidized it in various other ways even before the Difesa do Cafe set in. There is also the influence of weather, of the development (primarily, 1870 to 1890) of steamship lines, domestic transportation (until the sixties, coffee was transported from plantations to ports by mules), the development in the importing countries of subsidiary industries, and the changing competitive situation with relation to the other producing countries and to tea. If we take deviations of price corrected for level and of per capita consumption from curves drawn freehand

[1] Of the considerable literature we will mention only H. Roth, Die Uebererzeugung in der Welthandelsware Kaffee im Zeitraum von 1790–1929, and E. W. Gilboy's Study of Coffee and Tea, 1850–1930, previously cited. Also see Rowe, Studies in the Artificial Control of Raw Material Supplies, London and Cambridge Economic Service, *Special Memorandum* 35, 1932.

through points of inflection of smoothed original data, we find good inverse covariation (see Mrs. Gilboy's chart, *op. cit.*, 673), which shows that the "movement along a demand curve" was not entirely extinguished by shifts. But the line through the inflection points of the price graph has a shape all its own. The corresponding line for per capita consumption since about 1870 displays only what may be called a result trend.

The example displays very well the list of problems we encounter in price analysis and particularly, the writer is grieved to say, the difficulties which exact methods of analysis are sure to meet. Technological lag, by displacing and distorting effects and giving large scope to miscalculation, certainly will produce fluctuations which would be absent without it and cycles that are special in *this* sense. But first, it would be a grave error to assume that the fluctuations actually observed simply indicate the effects of the presence of technological lag in adaptation and, second, it would be not less erroneous to think that we have here the case of an endogenous fluctuation, which of itself might go on indefinitely, possibly even with increasing amplitude. Coffee simply responds to a great number of impulses. It *creates* cycles if, as, and when its production involves innovation; it *experiences* the influence of cycles as far as it experiences cyclical variations in consumers' expenditure. The latter effect is, if anything, more clearly marked than the effect of the coffee-tree lag. And it is to these cyclical and external influences that its fluctuations are due. Only the form of these fluctuations is shaped by the structural properties of the coffee resonator, of which the lag is one.

The point we are trying to make stands out still more clearly in the "cycles in animals." The case is somewhat simpler because, though there are plenty of qualifications, production of animals for human consumption is, for Germany and the United States, primarily a domestic industry and, again with exceptions, one in which the element of innovation does not so powerfully disturb the picture as it did in the case of coffee. These cycles are also held to derive from the fact that adaptation to any supernormally or subnormally favorable situation is possible only with a technological lag, corresponding to the time it takes to rear an animal to the requisite age, substantially fixed[1] and the same for all

[1] As the reader sees, we are simplifying to the utmost. None of the above statements is entirely true. To begin with, even if the period of rearing and fattening were exactly equal for all the farmers of a country, the moment when they get ready with their supply would differ somewhat because in some cases and within certain limits the decision, for instance, to rear more hogs can be immediately given effect to, while, in other cases and beyond certain limits, time-consuming rearrangements on the farm may be necessary. Second, the situations facing farmers, particularly in different parts of a country, are not equal. The effect of a favorable or an unfavorable fodder-meat ratio depends on the possibilities in other lines of production. Third, there is, both for the initial decision and

producers who, being faced by the same situation, have to make their decisions at about the same time. It should be observed at once that it is further necessary to assume that they will take no account of their competitors' actions until they all of them come out with their product. Obviously, this assumption is unjustified, for the behavior of competitors is no secret. Therefore, waves started by a single disturbance would, notwithstanding the lag, soon die down. The idea that one disturbance, once having caused an exceptionally favorable or unfavorable situation, will thereby create a wave that might, under its own steam as it were, go on forever is manifestly absurd. Producers may and actually do react in those cases in such a way that the mass effect of their adaptive action will create a disequilibrium in the direction opposite to the deviation to which they intended to adapt themselves; and rebound from the untenable position is similarly likely to outrun the goal. But eventually they would learn the lesson. It is nothing short of thoughtless to trust the constants of some equation to supply proof of the contrary. We recall what has been said on the subject in the second and fourth chapters and conclude that, since those waves go on apparently indefinitely and since they are (comparatively) so regular, they can precisely *not* be endogenous in the full sense of the word, but must be kept going by shocks from without or by a generating mechanism. This mechanism can be only the cycle—particularly, the Kitchin, but also the Juglar—acting through consumers' expenditure.

That this is so can be readily seen, for instance, in the standard case, the hog cycle.[1] Hog prices, on the whole, move well with all three cycles

later on, room for choice and also for revision of choices made. Even if all had actually produced the same type of animal with a view to having it ready at about the same date, necessity for selling at that date differs widely. But although these and similar considerations should make us less confident in the interpretation of certain striking regularities, we may take it that, for the limited purposes we now have in view, they are of secondary importance

[1] But it is the same with cattle and lambs. All those cases are complicated by intercommodity relations and jointness in animal products and, of course, such external events as weather (including its effects on the price of fodder), variations in consumers' tastes, and so on. Sheep production is nevertheless, in this country at least, a very good case, in spite of the complicated relation of the consumption of lamb and mutton to that of beef, pork, poultry, and veal (to the last of which it shows some inverse relation). The sheep population in this country did not display any marked tendency from 1890 to 1913, but three very regular cycles. Recovering from a drop it rose to a maximum in 1893, dropped to a minimum in 1897, reached an almost equal maximum in 1902, and a somewhat higher one in 1909, after which it dropped sharply. Farm value of sheep per head has maxima in 1893, in or about 1900 and 1906, Chicago price (medium to choice) in 1892, 1898, and 1905. Sheep price precedes sheep population by about two to three years. There was, of course, the transition from production for wool to production for meat and the increasing emphasis on lamb production. Those six-, eight-, or nine-year cycles cannot be simply linked to the lag; on the contrary, they point to other factors. They seem to have much more to do with

(see, for example for Germany, the chart on p. 91 of the new price study, previously quoted, of the Berlin Institute, covering by two series pork till 1863, hogs since—nearly 150 years. For this country and over his period, Professor Mills gives a good mark to his two hog entries, Nos. 15 and 16, duration of cycle, 38.8 and 38.4 months, respectively). Their relation to cyclical changes in consumers' income is too obvious to require proof.[1] It is true that these shifts of demand are combined with strong movements "along demand curves." Receipts of hogs at markets or, for that matter, slaughter, are related inversely to prices of hogs (see, for example, Mr. Hanau's graph for Prussia, 1900–1913, p. 18 of the first edition of his study) and positively to the relation between the prices of hogs (or pork) and of fodder that prevailed about 18 months[2] earlier. Prices of hogs could almost be forecast from this relation alone, and it therefore seems at first sight that that market is entirely dominated

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the sweep of the Juglar, although the relation is as blurred as we might expect it to be. Mr. M. Ezekiel's most interesting study, Factors Related to Lamb Prices, *Journal of Political Economy* for April 1927, entirely free from special-cycle obsessions, and a landmark for that kind of work, finds a 68.3 per cent "determination" of the price of dressed lamb (in the multiple correlation sense) by Mr. Snyder's General Price Level. This is quite enough to establish our point, although correlation with a pay-roll index would have been more relevant. That business activity figures among determining factors only with 0.7 per cent does not prove anything against us, because it is measured by the Harvard Price Index of Business Cycles, deflated by the B. L. S. wholesale price index. Mr. Ezekiel himself expresses doubts on the subject in his note, *op. cit.*, p. 248.

We cannot and, for our purpose, need not go into the ever-expanding work on hogs. We merely quote Haas and Ezekiel, Factors affecting the Price of Hogs, *Department of Agriculture Bulletin* 1440, November 1926; (S. Benner, the discoverer of the hog cycle, as far as the writer knows, should not be forgotten however: Prophecies of Future Ups and Downs in Prices, 1876); Sarle, Forecasting the Price of Hogs, *American Economic Review*, 1925; Sewell Wright, Corn and Hog Correlations, *Department of Agriculture Bulletin* 1300; A. E. Taylor, Corn and Hog Surplus of the Corn Belt, 1932; and A. Hanau, Die Prognose der Schweinepreise, *Vierteljahrshefte zur Konjunkturforschung, Sonderheft* 2, revised *ibid.* 18. For cattle, see the same author's study, *ibid., Sonderheft* 13. Grateful acknowledgment should be made for helpful suggestions derived in this whole range of subject from L. H. Bean, The Farmer's Response to Price, *Journal of Farm Economics*, 1929.

[1] See O. V. Wells, Farmers' Response to Price in Hog Production and Marketing, *Department of Agriculture Technical Bulletin* 359, April, 1933, in which study this element has been considered, p. 8. Notice also the behavior of commercial slaughter, p. 37. Haas and Ezekiel, *op. cit.*, arrive again at a very low estimate of the influence of the cycle by taking, this time, not only the Harvard Price Index, but also an index of prices of industrial stocks as a series to correlate with, for which there is still less justification. The graph on p. 26 of that same study shows the Kitchin almost ideally.

[2] There was some "technological change" in fattening which seems to have affected the period, but it was about that length in the last prewar decade both in Germany and in the United States. It is, however, not quite convincing, for the period of gestation plus the period of rearing and fattening is more nearly 15 months. That the farmer does not act at once upon a given hog-fodder price relation is plausible. It is less plausible that it should always take him just 3 months to arrive at a decision.

by the variations of supply, which in turn are entirely mechanical. The inference about the presence of a special cycle unrelated to the business cycle which some students draw is, nevertheless, entirely unwarranted. What we behold when looking at those hog graphs that are so remarkably regular, is nothing but the—wavelike, to be sure—working of a particular apparatus of response.

C. The Cycle in Shipbuilding.—This cycle, made famous by Professor Tinbergen,[1] serves to illustrate a lag phenomenon incident to all time-consuming construction of plant and equipment and therefore differs (also in other respects) materially from the hog case. Our discussion continues an argument opened in the fourth chapter, sec. E. Let us consider total tonnage as a certain function of time (cyclical time in the first instance, but later to be linked with historical time), say, $f(t)$; and let us identify rate of change in total tonnage in a first approximation with shipbuilding, which therefore is $f'(t)$. If, at any point of time, total tonnage be above normal—whatever that may mean—this will send down freight rates and reduce shipbuilding (it cannot make the increment of tonnage negative). If total tonnage be below normal, the reverse will happen and after a period ϑ, determined by the time it takes for shipping companies to order and for shipbuilders to build new tonnage, total tonnage will increase according to the intensity with which carriers react. This intensity is assumed to be a constant a, and is measured in terms of the increase or decrease in tonnage ordered that corresponds to some unit deviation of tonnage from normal. Shipbuilding or rate of change in tonnage is thus linked to that tonnage which existed at time $t - \vartheta$, hence $f'(t) = -af(t - \vartheta)$. This functional equation is treated in the familiar way, *i.e.*, by substituting.

$$f(t) = e^{\alpha t+\beta} = Ce^{\alpha t}$$

Clearing for $Ce^{\alpha t}$, we get $\alpha = -ae^{-\alpha\vartheta}$, and if we put $-\alpha\vartheta = x + iy$, we get an exponential with a complex exponent the imaginary part of which will give us periodic fluctuations.[2] These fluctuations in tonnage can

[1] Ein Schiffbauzyklus? *Weltwirtschaftliches Archiv* for July 1931. What will be said in the text should not be construed as adverse criticism of Tinbergen's work. In later papers he has shown, in particular, that he is fully aware of those elements of the case that we are going to stress.

[2] There is some danger of the layman's misunderstanding this procedure. The complex exponent is, of course, chosen because we know that there are fluctuations in the phenomenon. But that these fluctuations are due to the lag that enters into the functional, from which they are then by means of that complex exponent deduced, is really a new hypothesis, which, to be sure, may derive justification from good fit of results—we do not believe it does—but which must not be mistaken for a result following from the original setup itself. This could equally well be satisfied with an aperiodic solution, which the existence of the fluctuations would not prove to be wrong. They would simply have to be ascribed to something else.

then be represented by a composite of cyclical and of aperiodic movements, periods depending on ϑ and a only. The composite, cleared of meaningless solutions, is extremely pliable, the introduction of this piece of apparatus a matter of congratulation.

But, as applied to our subject, this chain of reasoning gives rise to various doubts. To begin with, fluctuations of this kind cannot be called endogenous in the sense of being self-generating, for they obviously depend for their existence on some disturbance that starts them. Second, they can be self-perpetuating only if we assume a very peculiar form of reaction by carriers, which violates not only the general assumptions of economic theory about rationality of behavior but is at variance also with commonsense. We cannot reasonably assume that reaction to, say, abnormally favorable freight rates will be mechanical and proceed without any consideration of the causes and probable duration of that state of things and of the effects of simultaneous action by the whole trade. It is no valid objection that results will only show with a lag and impinge upon a situation that has changed meantime, so that even reaction correct *ex visu* of the moment in which it was decided on may yet be proved by the outcome to be wrong: for this would not happen if no other process were at work or if no further external disturbance occurred—in which cases it is that process or this disturbance and not any automatism inherent to shipbuilding that causes the discrepancy and further fluctuations. Third, the argument involves neglect of the regulating influence of a reaction of prices of new ready ships, second-hand ships, and newly ordered ships. Fourth, there is the objection to using a trend line as a normal from which to measure deviations of tonnage. Since this trend itself is the work of growth and cycles, its elimination removes part of the essence of the process. Nor can it, fifth, be taken as a standard by which to judge correctness of reaction, for cyclical variations of demand must be taken into account both by carriers and by the economist who observes their behavior: freight rates are not an invariant function of tonnage alone and, as soon as this is recognized, there is an end of this particular cycle.

Inspecting Chart XXII, we find the implications of this fully borne out by the facts of the case. Of course we see the effects of all the peculiarities of the industry—the effects of subsidies and policies of prestige embarked upon by other nations but influencing the British situation; of the fact that shipping and ship-building reflect economic and political conditions all over the world; of the relation that transatlantic freight carrying bears to emigration; of the fact that shipping will share, to a large extent, the fate of international commodity trade, which itself deviates, especially for longer periods, from the contour of the cycle; and so on. Above everything, we must attend to the fact that,

technologically and commercially, important innovations took place in shipping and shipbuilding, which will account for the long-time tendency of freight rates to fall even after the general rise in prices had set in, and partly also for rate wars. Considering all this, cycles show well enough both in rates and, particularly, in construction. Their movements,

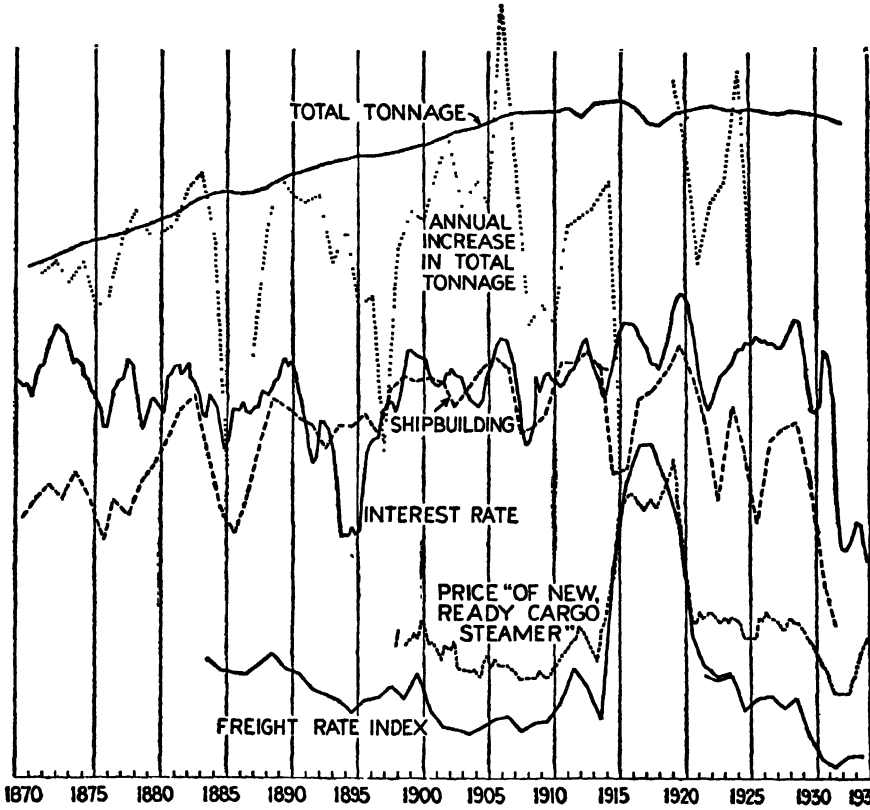


CHART XXII.—British shipping and shipbuilding (see Appendix, p. 1059).

inverse to each other in a long-time sense for the period covered by the chart, and substantially synchronous and in the same direction in a short-time sense, are exactly what we should expect in the case of the cyclical process acting on this particular resonator and can be fully accounted for without the element of lag. The writer believes, in fact, that the latter had very little influence and that such verification of the opposite view as may be derived by formal methods is largely delusive.

D. Entrepreneurial Price Policies.—If the entrepreneurial act consists in the production by a new method of a commodity already produced under conditions of perfect competition which the entrepreneur is powerless

to alter, so that he is confronted by an individual demand curve of infinite elasticity, the price-quantity pairs of the industry in which the innovation occurs and of its subsidiaries and competitors will be affected in ways that do not call for additional comment. Occurrence of innovation must, as mentioned above, be located historically[1] in every individual case, a task necessarily preliminary to any thorough price-quantity analysis. Recalling what has been said before and using traditional concepts, we may now define the ultimate task of such analysis as follows: given time series of actual price-quantity behavior, to resolve them into five components, namely, movements along supply or demand curves, shifts (including changes in form) of demand curves within invariant indifference varieties (constant tastes), shifts (also including changes of form) of supply curves within invariant production functions, autonomous changes of tastes, changes of production functions (innovation). The task is difficult if numerical exactness is the goal. It is, though laborious, not difficult if we content ourselves with a rough commonsense approach. In particular, there is no difficulty in accounting for the behavior of price-quantities in the prolonged periods of adjustment that are sometimes induced by innovation and during which, many or most firms continuing to produce at a loss for years, the survival of the unfit creates that species of overproduction with which we are familiar. Other deviations of price-quantity pairs of innovating industries from the average of all commodities, which might easily be mistaken for special cycles or trends, are not less easy to understand.

But if innovation consists in the introduction of a new commodity, the entrepreneur finds himself, as we have seen, almost invariably in an imperfectly competitive situation. In most cases his enterprise also impinges on a sector in which imperfection prevails independently of it, so that the little which, for our purpose, it is necessary to add to what has been said on the subject in the second and fourth and in the historical chapters, can be conveniently dealt with under this aspect. We then meet again the phenomenon which we call stability of price if we approve, and rigidity of price if we disapprove of it. Although there is little reason to believe that this stability or rigidity has been on the increase during the last fifty years, and that it really merits the attention which has been paid to it of late, it is important for our purpose to understand what it is that prevents so many prices of new as well as of old commodities from participating in the cyclical fluctuations as prices under perfectly competitive conditions would.

[1] It follows, however, from our discussion in the third chapter that the occurrence of innovation may be indicated by the behavior of marginal cost corrected for change in prices of factors. The development of this technique and corresponding fact finding are urgent desiderata.

Traditionally sticky and authoritatively regulated prices do not, from our standpoint, differ very much. That cycles, Kitchins in particular, will in many cases be missed by commodities and services that fall in either class is too obvious to detain us. But three points deserve notice—all of them relevant also to the examples that follow. First, any industry or firm which asks a public service commission to sanction an increase or a decrease in price, must know that the first is extremely difficult to grant and that the latter is, for the same reason, likely to be definitive. It requires spectacular emergencies—inflation may not be sufficient—to "justify" an increase in the eyes of an invariably hostile public opinion. This is an external factor. Second, it does not necessarily follow that quantities will now fluctuate more than they would with a more variable price. As it happens, many of the commodities in question meet with a demand of low elasticity, which also does not much shift in the course of cycles. It is often doubtful whether quantity sold would, in an ordinary depression, be appreciably greater if prices were promptly reduced. Third, in not unimportant cases demand, without being inelastic, is such as to react only to price reductions so considerable as to be normally out of the question without an important innovation. Quite frequently, reduction will have sense only if the intention is to tap new strata of consumers. But such a possibility is not necessarily associated with any particular phase of the cycle, and may well offer itself in prosperity.

We will next consider the case of a few-firm industry the units of which have, through mere sluggishness of business spirit, for some time been left in undisturbed possession of the field. The firms are assumed to be no less sluggish themselves and to have settled down, but without agreements, in an oligopolistic quasi-equilibrium buttressed by product differentiation. Such an oasis, it is true, is not easy to find—most instances that one might think of proving to be spurious on analysis—but it will serve to illustrate a point we wish to make. Let prosperity set in. The firms will enjoy brisker sales, but unless they are unable to increase their output without incurring higher cost per unit, they will not readily take advantage of the situation by raising their prices; for in this case price cannot impersonally rise as does the price of wheat. Somebody who can be identified has got to do the thing; and he risks losing custom, even if the others eventually follow, which at least some of them may not do at all, because they hope to conquer some ground that they did not dare to invade initiatively. Similar considerations apply on the downgrade. It should be observed that the very stable prices that statistics will report while such a state of things lasts, are not inflexible in the same sense in which a traditional or regulated or agreed price is. They could vary at any moment and are chosen on strictly

rational considerations, with a view to what under the circumstances is maximum advantage over time. We have in this case assumed sluggishness, not in order to suggest irrationality, but only in order to exclude the spirit of innovation and propensity to fight.

Irrational elements of course come in to help to petrify. In spite of both rational and irrational elements, the situation is not likely to last in a world pervaded by our process. But if existing firms are satisfied with it, they may and often do attempt to peg it—which, for some of them, implies readiness to forego such individual opportunities as they may have reason to expect from the incessant revolutions wrought by that process—and to adapt it by corporative action to changing conditions. They often try to "rationalize" it by agreeing to outlaw "cross hauling" —which, however, is not easy to recognize in the case of product differentiation. They may get together in order to "educate" each other up to an "ethical code."[1] Or they may simply decide to prevent their resale agencies from starting on a warpath of their own—one of the motives, though not the most important one, for the movement toward Resale Price Maintenance.[2] They also may corporatively adopt a policy of Basing Point or of Delivered Prices, as, for example, has been done in this country by the steel, cement, lumber, paper, petroleum, beer, rubber, glass, fertilizer, flour, and sugar industries. We are not here concerned with the merits and demerits of these practices, into the discussion of which enters so much "theory" that really deserves the quotes. But it should be observed that, while some of them may work in the direction of perfect competition and none of them necessarily spells rigidity of price, yet all of them require machinery which is difficult and sometimes costly to set into motion. We had examples in the historical chapters. Industrial resonators are structurally affected by those policies, and failure of prices to react to cyclical situations is, in a very obvious way, often accounted for thereby.

If policies of that type issue in a cartel of the German kind, the working of the brittle monopoly that may be enjoyed by the industry in the intervals between recurrent breakdowns reveals, first, the main rational and purely economic reason for price stability in a monopoly situation.

[1] Such attempts are sometimes unintentionally humorous. But their meaning is not disposed of by the proof that some arguments used—such as the argument that total average cost must always be covered—are erroneous. See, for an instance, E. C. Brown, Price Competition in the Commercial Printing Industry of Chicago, *Journal of Political Economy*, 1930. Notice, in particular, the Code of Ethics adopted by the United Typothetae of America, p. 199. How many of us, and for how varied reasons, yearn for the spirit of the Middle Ages!

[2] Examples abound; see, for instance, E. T. Goether, Resale Price Maintenance in Great Britain, *Quarterly Journal of Economics* for August 1934. This paper has the merit of bringing out very clearly that such attempts are like *canoes* trying to live in a stormy sea.

It has been mentioned above in another connection: a monopolist, if he faces a demand which, within the useful interval, either is always insensitive to price or becomes so when shrinking in depression, will have no motive to reduce price, while in perfect competition it would always fall. This is so with many highly finished consumers' articles of small importance in the household budgets and with some important producers' goods that individually contribute but little to the total cost of any product. But it should again be emphasized that the departure of such prices from the cyclical pattern which would prevail under conditions of perfect competition does not, in the case envisaged, imply corresponding deviation in quantities, which do shrink, no doubt, but not primarily because prices stay up and not much more than they would in the absence of monopoly. As far as this goes, therefore, certain well-known propositions about price rigidities that intensify depression do not follow, and there is *some* justification for that attitude taken both by business interests and politicians which in our days crystallized into the NRA legislation.[1]

Second, that tendency of monopoloid situations to produce stable prices is reinforced, even if there is no cartel or monopoly in a strict sense, by the practice of providing capacity for cyclical peak demands. As stated before (fourth chapter), this practice may result in the prices of the most cyclical industries becoming the least cyclically variable of all. This phenomenon would also be impossible in perfect competition. It does intensify fluctuations in quantities but rather mitigates than intensifies cyclical difficulties. Third, the rational but extraeconomic considerations that have been mentioned above greatly influence a capitalistic combine which knows that it is unpopular, that any reduction of prices will be looked upon as a proof of past exploitation, and that it may be impossible or difficult to increase price again. The policy of letting sleeping dogs lie, therefore, frequently recommends itself. This applies to any monopoloid situation, but in the case of a cartel there are, fourth, the difficulties of taking action in the face of divergent interests of members. In Germany, for instance, it was often the case that the biggest and most efficient firms opposed increases and sponsored decreases of prices and that the smaller and less up-to-date firms clamored for the former and fought the latter, bitterly accusing the big men of being "apostles of abstemiousness" (the writer is trying to convey the meaning of *Maessigkeitsapostel*). There were many reasons for this. One of them, however, was that the big firms did not relish the idea of having to back a policy which pre-

[1] The above must not, however, be interpreted as a defense of any particular policy. All it means is that there are cases in which measures of a monopolistic flavor cannot be condemned on traditional antimonopolistic grounds. See, however, Professor Karl Pribram, Controlled Competition and the Organization of American Industry, *Quarterly Journal of Economics* for May 1935.

vented them from using their powers to the full and tended to preserve economic lives the necessity of which they were unable to see. Understandably, this often spelled deadlock,[1] with the result that, no decision being arrived at, prices did not change at all or changed with a perfectly erratic lag.

On the whole, readiness to combine is more marked in Kondratieff downgrades than in Kondratieff prosperities. (For examples see Chap. VII, especially sec. D). But there are many exceptions to this generalization. It seems that the structure and conditions peculiar to the individual industry count for more than does the general business situation. Nor is this astonishing. When things look bright, one of the strongest motives may be lacking for firms to take shelter, but others are gaining in importance and there is less motive for breaking away in despair—*vice versa* in depression. Now since an organization that really constitutes anything at all approaching monopoly, will, as we have seen, powerfully influence the price-quantity pairs of the industry, its foundation or breakdown will dominate their statistical picture and may even blot out the influence of cyclical fluctuations altogether. Examples abound and need not here detain us. There is nothing in this to modify our theory of cycles or the expectations that follow from it.[2]

If a cartel breaks down, or if a quasi-equilibrium among oligopolists is disturbed, it does not follow that we may now substitute the competitive schema to the one that applied before. On the contrary, there will be what we call a Disorganized Market. We shall observe those moves and countermoves, which have little relation to costs and may have almost as little to the cyclical situation, particularly if, during the rule of a cartel, excess capacity has developed: *bellum omnium contra omnes.*

[1] So did other things which are very real, though not always easy to establish beyond doubt. There is a committee-room etiquette, departure from which, even if unintentional, may be felt to be an outrage, driving the offended person into restive ways which we should unhesitatingly call feminine if we observed them at a tea party. There are armchairs and ordinary chairs. A history of the secrets of big business is much more likely to bring out the importance of this class of fact than to reveal dark deeds and profound plans.

[2] Responsibility for a large fixed investment may—though mostly it does not—account for a wish to reduce risks by combination; necessity of committing oneself to large fixed investment may account for the existence of a monopoloid situation. In either case, there is a connection, at one remove, between size of overhead and some motives for a policy of price stabilization. But it is perhaps not superfluous to say that there is no other. The mere fact of relative or absolute largeness of overhead would not, in itself, make prices more stable than they otherwise would be; it would, if anything, tend to make them less so. The contrary opinion would be nothing but an error, if it did not acquire some importance from the fact that business practice often shares it. But observe that the presence of the error in the practitioner is not proved by the facts, either that he uses the fixed cost argument in justification of his refusal to reduce prices in depression to marginal costs or that actually he does not do so.

The American paper industry and, to a certain extent, the American shoe industry in the twenties of this century, or, at various junctures, the German cement industry, may be cited as instances. But such a situation will not always be faithfully reflected in the behavior of price-quantity pairs; for there will be rebates, credits, and concessions in other conditions of supply. Changes in quality will replace changes in prices and make it difficult to follow up changes in quantities. In fact, a situation like this can persist for some time without affecting the quotations from which statistics are derived. This is a case of spurious or statistical stability.

This analysis also applies to the case in which it is a new commodity that supplies the upsetting impulse, although the economic meaning of the ensuing competitive struggle is profoundly different, the position of competitors being not unstable merely, but inherently untenable. Only two points call for additional comment. First, for a considerable time during which the new article is vigorously gaining ground, its price as well as its quantity may be very little sensitive to cyclical fluctuations. Demand may go on shifting upward through several consecutive depressions of the Kitchin, possibly even of the Juglar, and there may be no reason for the innovating firms to change their prices. There are many instances of this in such fields as the motorcar (carrying with it gasoline, some rubber goods, nonshatterable glass, and so on), electrical apparatus, harvesting machinery, rayon, alloy steels, motion pictures, and other industries. Needless to say, such behavior is for us anything but contrary to expectation, however much it may deviate from average behavior. Here, again, stability of price is in a sense spurious. For prices are stable not primarily because they are kept so, but because opposing forces, acting upon price and quantity make them so: another instance to show that prices which do not change for a time are not, *ipso facto*, rigid in our sense.[1]

The second point refers to those situations in the cyclical process of evolution in which entrepreneurs temporarily enjoy what, on a previous occasion, has been called an acceptable approximation to straight monopoly (Chap. II, sec. F, III). In such situations, several courses are open to them. For instance, they may decide to make hay while the sun shines, to use this hay to write off their plants to $1 as quickly as possible, and accept defeat without struggle when their demand curve crumbles. It should be observed that in such truly monopolistic cases it would, in general, precisely not be to the interest of a seller to keep his prices stable through changing situations. But as a rule an entrepreneur has no such chance and no such intention. He must build up demand

[1] See, however, V. A. Mund, Prices under Competition and Monopoly, *Quarterly Journal of Economics* for February 1934.

and then defend the ground conquered against the attacks of competitors for whom he fatally paves the way. Hence, he is neither before nor after success in a position to behave according to the schema of the classical theory of monopoly. In those cases in particular, which have steadily grown in importance ever since Huntsman produced steel in the dark of the night, by the work of his own hands, in which the entrepreneurial achievement consists in or presupposes the creation of facilities for mass production, demand can be built up and the ground conquered be defended only by selling cheaply from the start and never raising prices afterward. Visualizing the price that in the average of good and bad years will attain both ends, and being able to produce at costs which that price will more than cover is, in those cases, the main requisite of success. Theoretically, such a price need not be inflexible downward, but it is easy to see that under the circumstances any reduction, unless based on quite permanent conditions, must be a dangerous step to take. Hence we find, mainly in the field of highly finished consumers' goods but also in the field of tools and machinery, so frequently prices that according to all ordinary standards are extremely rigid—the price becoming part of the individuality of the commodity and the firm being practically committed to it. But the point to be made is that this kind of rigidity differs from, and does not entail the same cyclical consequences as, rigidity in the usual sense. The latter is defined by, and its effects turn on, deviation from the price that would at any moment be ideally—never mind now whether in a monopoly or competitive sense—adapted to the general situation.

A price of the kind envisaged will not conform to that standard, but it will, since it has been fixed with a view to an expected sequence of situations, come in case of success—which of course is a matter of a lucky throw—much nearer to it than a price fixed, say, by compromise such as is characteristic of a cartel or by some rule dictated by a public service commission. It is also not true that in these cases, as a well-known slogan has it, "quantity adapts itself to price instead of price to quantity," because considerations about future quantities of output precisely hold first place in determining the decision. Moreover, it must not be forgotten that any new article, however inflexible its price may be, is still a tool of flexibility in the system as a whole, by virtue of its impact on the preexisting price-quantity structures in its field. Finally, if adjustment becomes necessary after all, there will be motive to effect it through change in quality or, if that be impossible or undesirable, by offering another type or many other types of product at different prices. Statistics will then, if the old type is not discarded, record absolutely rigid prices for both the old and the new type, while to all intents and purposes there is—an inhibited, no doubt, and discontinuous—flexibility and the

usual inferences from price rigidity are largely unwarranted, though of course not wholly so. This is particularly clear if several similar articles are offered from the start—"a car for every purse," for instance—when no actual change of price is necessary at all in order to produce practically all the effects of prompt variability.

Thus, analysis of the nature and sources of the various kinds of price rigidity we observe and of that monopolistic or oligopolistic strategy which, intentionally or unintentionally, rationally or irrationally, is responsible for some of them, hardly lends support to the ideas many students entertain about their importance or, as some would say, growing importance for the cyclical mechanism, particularly, their dislocating effects on the rest of the system in depression. There is less genuine rigidity, and what there is of it is less dislocating, than is widely assumed. We should not, however, run into the opposite error. The very fact that every concern which has any opportunity to do so strives to secure a position that looks as monopolistic as possible—by advertising, differentiating its product, trying to control competitors (electric power and light companies, for example, tried to get control of gas companies; American railroads tried to buy up trolley lines), warding off competition by preventive attack—is in itself sufficient to prove that such positions are not valueless. But we have seen in our historical sketch that their value consists, rather than in any power to follow a long-run policy of restriction of output, in the facilities they afford for steering safely through difficult situations and for undisturbed planning. And the difference the existence of such positions makes is not so much a difference in ultimate results as a difference in the way by which they are reached. The latter is, to be sure, quite sufficient to upset our expectations as to the behavior of price-quantity pairs in the short run, *i.e.*, practically in the Kitchin. But it is not sufficient to upset the working of our process.

CHAPTER XI

Expenditure, Wages, Customers' Balances

A. Some Propositions about Money.—Propositions about money have been introduced already, and others will be when necessary. Most of them are to be found in Chaps. III, VIII, and XIII. Still others will be assembled in this section. Since it is not possible to deal in this book with the general theory of money to which these propositions pertain, they must here appear in an incomplete and unsatisfactory form and detached from the background on which alone they could acquire their full meaning.[1]

1. Money may be, and in practice mostly is—at least historically—linked to some commodity. But it never *is* a commodity and never satisfies wants in the sense in which commodities do. If we nevertheless attribute utility to it, this utility is derived from that of the commodities we actually buy, or could buy, with it and hence presupposes given prices, or ratios of exchange between money and commodities. Any attempt, therefore, to deduce these prices from marginal utilities of money and marginal utilities of commodities, in the way in which we may deduce exchange ratios between commodities from their marginal utilities, involves circular reasoning. This is so even if the monetary unit consists, for instance, of a given quantity of metal that can be freely coined and melted without cost or loss of interest. For although in this case the exchange value of that quantity of metal in its monetary use can never depart from its exchange value in its industrial uses, the former cannot fundamentally be explained by the latter: the closing of the mints to the public would suffice to bring out the fact that money has an exchange value of its own, which, therefore, as long as coinage is unrestricted, "determines" the exchange value of the money commodity in its industrial uses quite as much as it is "determined" by it. Unfortunately we cannot enter into the discussion of the various devices by which theorists have labored to avoid the implications of this. It is hoped, however, that our argument is clear as it stands. If so, we may draw the conclusion that any kind of linking of the monetary unit to the unit of a commodity,

[1] The writer hopes to provide that background and to develop the theoretical structure of which these propositions are fragments, in his treatise on money.

whatever its practical merits in guaranteeing the value of money may be, is logically nonessential and subjects the functioning of the monetary system to an additional condition which is extraneous to the meaning of money.

2. The fact that money is not a commodity explains what otherwise would be inexplicable, namely, that claims or titles to money (however defined) may serve the same purposes as money itself. This is the fundamental explanation of the possibility of "credit creation," as well as the reason why it is so easy to create "near money"[1] and so difficult to prevent the creation of it. No such thing can occur in the case of a commodity.

3. The same fact underlies the phenomenon of "velocity of money," which, similarly, has no analogy in the world of goods and services. This phenomenon is not correctly described by calling money a durable good which can serve many times. Money serves merely as a counter, which, within technical limits, can turn up any number of times during the game. These limits are essential, however. The "periods," *i.e.*, the spans of time which it takes the monetary units to complete their circuit, are the fundamental facts about monetary circulation.

We have to distinguish three concepts of velocity: (*a*) the sum total of all transactions in terms of money divided by checking balances plus money outside of banks; (*b*) consumers' plus producers' expenditure by balances plus money in circulation; (*c*) consumers' expenditure by balances plus money in circulation. The last, the so-called income velocity—we may call it *net income velocity* to distinguish it from *gross* income velocity equal to total income by balances plus money in circulation—is the most relevant figure of the three; the first is, in itself, meaningless, though it must sometimes serve as the only indicator we have of the other two.

More important, however, is another distinction, which may be applied to any of the three velocity figures just mentioned. In a stationary state, velocity would be largely determined by the institutional arrangement of payments within the period of account. Suppose the economic process to be organized in such a way that all firms buy productive services from households, say, on each Saturday, and all households buy consumers' goods from the same firms and for the same amount of money, on each subsequent Monday. This being all that happens, income velocity per year is 52. We may go a step further, however, and assume that incomes are paid out and spent concurrently all through

[1] The writer supposes that that term has been coined by way of analogy with "near beer." If so, it does not express the whole truth. Near beer did not serve so well as beer and it had to be produced. It is, also, not quite correct to say that "credit" serves as a "substitute for money."

the week in small installments, and that the sequence of everyone's individual payments and receipts is random. This case will, of course, give a different velocity and, moreover, display an element absent in the first case. Households as well as firms will now hold an element of cash specifically intended to provide for the occurrence of unfavorable sequences. Subject to this new proviso, however, there is still a determined velocity measuring the way through economic space of every unit of money spent—and *all* units that are spent are assumed to be promptly spent, for there is, in this setup, no object in withholding them. We shall use the word *efficiency* for this kind of velocity, or confine the term *velocity* to it. For it the classical assumption of constancy or slow and independent variation is approximately true, not only in the stationary state, but in all cases, that of extreme inflation alone excepted.

As soon, however, as we leave the precincts of the stationary process, in order to deal with changing business situations, we meet besides efficiency a phenomenon which is entirely different from it, although it influences velocity figures similarly. We find that people sometimes do withhold money they intended, and still intend, to spend; and that, whereas before spending was a matter of course, the question whether or not to spend at any moment becomes a question of policy for everyone, obviously important for the picture the monetary process will present. While efficiency refers to the velocity of any unit that is actually sent over its path, we now find another component of the velocity figure which refers to the proportion of existing units so sent. We shall call it Rate of Spending, or simply Spending (see Chap. III, sec. A), and shall put its equilibrium (stationary) value as equal to unity. Obviously, this is the cyclical variable within total velocity.

4. Since certain claims to "money" serve, within wide limits, the same purposes as legal tender itself, it is not only necessary to include the existing amount of such claims in the total quantity of money (typical cases: bank notes, deposits subject to check), but also evident that the very concept of quantity of money becomes doubtful. *It is, in fact, impossible to speak of the quantity of "money" in the sense in which we speak of the quantity of a commodity.*[1] We therefore stand to lose what, as we have seen in the chapters on price level and prices, is nevertheless a necessary element in the determination of values. What is to fill this breach in the theory of money is a problem which cannot be attacked here.

In any case, however, we cannot here consider quantity of "existing" or "circulating" or "available" money as an independent variable, because, although it varies in function of some elements that may, in the

[1] Another consequence is that the distinction between velocity and quantity becomes blurred. K. Wicksell, for instance, treated the issue of bank notes as a means of increasing not the quantity but the velocity of money (the banks' reserves).

sense of the old quantity theory, be looked upon as data, it also varies in response to other variables of our process, entrepreneurial activity in particular. It has been pointed out before that many modern authors—most of them adherents of the investment theory of banking (Chap. III)—try to meet this situation by what may be interpreted as a revival of the quantity theory. They figure out what the technical maximum of credit creation is within a given institutional frame—legal or traditional rules about reserve proportions and the like—attribute to banks a tendency to maintain that maximum of customers' balances and thus construct a quantity of money which is held to act as such on the economic process (and to have a causal significance) in much the same way as the quantity of money in the quantity theory sense was by older authors held to act. In Chap. XIII we shall see how far from satisfactory any such mechanistic theory of banking is. Here it is sufficient to state that, even disregarding the fact that that institutional frame is not independent of the evolutionary process, the maximum alluded to does not constitute the supply but at best the limit of the supply of balances, and that the amount banks are, in a given situation, willing to supply cannot be explained by considerations at all analogous to those that are applicable in the case of the supply of a commodity.

5. Money not being a commodity, the traditional apparatus of supply and demand cannot be applied to the solution of the problem of money prices of commodities and of the price levels (see Chap. VIII). An exchange of money for commodities is not the same phenomenon as an exchange of one commodity against another. This is still clearer on the demand side than it is on the supply side. We may, with some qualifications, speak of a demand for money in the money market. But there is no sense in speaking of a demand for money displayed by sellers in a commodity market. Demand for money carries, however, still another meaning: it may mean the wish to hold stocks of money or balances. This Walrasian idea of an *encaisse désirée*, which reappears in Marshallian analysis and has recently, it seems, entered upon a new lease of life, is one of the least valuable elements in the great Frenchman's mighty structure. It is harmless only in the analysis of stationary states, although even there it implies a misrepresentation of facts. If people get their "incomes" each Saturday and spend them on consumers' goods each succeeding Monday—transactions between firms being excluded—then the money will lie about in the vaults of firms from Monday to Saturday, not because there is any demand for cash holdings, but because the institutional arrangement so wills it. But the idea becomes misleading if we leave the stationary case. If we see someone displaying a wish for bread, this is a clear-cut fact carrying its explanation in itself and fit to be used in order to deduce the explanation of other facts. But if someone dis-

plays a wish to hold cash, this in itself means nothing at all. All the value of the observation lies in the circumstances that induce that wish—all the theory of the fact and its consequences turns upon those circumstances—even if there is such a wish. But generally there is none. A man may, for example, hold a supernormal amount of cash, not because this is any good to him, but simply because his and other peoples' actions happen to produce that result, which in itself is not one of the objects he wishes to attain by those actions; it may even be a disagreeable by-product of them. All explanations which start with the famous adage: "If people choose to hold · · · " are *ipso facto* condemned.

6. A general remark may conveniently be inserted here. One of the first tasks that confronted scientific economics in the early stages of its career was to fight certain popular views about money which, however understandable or even defensible they may now seem to the historian, were in fact largely erroneous. During their campaign against "bullionist" and "mercantilist" exaggerations of the importance of the role of money, economists were naturally driven to construct a body of doctrine in real terms alone. They tried to draw away the "veil" of money in order to describe the process of the production and consumption of wealth. This effort, although highly meritorious at the time, was bound to fail in the end. Economic action cannot, at least in capitalist society, be explained without taking account of money, and practically all economic propositions are relative to the *modus operandi* of a given monetary system. In this sense any theory of, say, wages or unemployment or foreign trade or monopoly must be a "monetary" theory, even if the phenomenon under study can be defined in nonmonetary terms. This is increasingly being recognized, and the fact that it is must be listed among the major improvements our analytic apparatus has undergone during the last 20 years or so. But we seem unable to draw away from an old error without running into the opposite one, which in this case is older still. That economic analysis cannot—in the sense in which for instance Boehm-Bawerk thought it could—abstract from money is a truth which is useful only if supplemented by the other truth that monetary processes never carry their explanation in themselves and cannot be analyzed in monetary terms alone. And recognition of the fact that, in its fight against mercantilist views about the causal role of money in economic life, classical doctrine went much too far must be supplemented by the other fact that in fighting them it also performed a service of which we again stand in need today.

B. System Expenditure (Outside Clearings).—The changes in monetary expressions and monetary quantities that occur in the course of the cyclical process of evolution either reveal themselves in, or are brought about by, changes in the totals of business and household

expenditure, which are—and so far we agree with the most monetary of theories of the cycle—the most important immediate conductors, as well as the most obvious effects, of changes in the general complexion of business situations. In a general theory of money it would evidently be appropriate to consider producers' and consumers' expenditure as mutually interdependent: producers' expenditure expands and contracts in function of consumers' expenditure exactly as consumers' expenditure expands and contracts in function of producers' expenditure, that is to say, in response to the changes in income paid by firms to households. But for the particular process with which we are concerned here, it is more helpful to recognize that the fundamental impetus comes from producers' (entrepreneurs') expenditure and that households merely react to it.

It is necessary to use this proposition with care. Instances of the reverse relation are not lacking, even within our process: that reaction of the business world which makes up what we have called the Secondary Wave is partly reaction by firms to increased consumers' expenditure. But inasmuch as these phenomena can be traced back to the impulse given by entrepreneurs' expenditure made in the course of carrying out new combinations of factors, they may also be considered as consequences of that prime mover. Not all incomes, moreover, are paid out by firms, nor do all that are, vary with the sum total of producers' expenditure. Exceptions must be made for them. But, with these qualifications and in this sense, it is still broadly true that household expenditure varies in function of producers' expenditure, although, of course, not simply in direct proportion to it. Common sense and common experience will probably find little fault with the simplifying generalization that producers' expenditure is, *within our process*, the active element of total expenditure in the system (consumers' plus producers' expenditure) or, to use a term due to Mr. C. E. Thomas, of *system expenditure*. We shall come nearer to facts if we assume this quantity to vary, not only in function of producers' expenditure, but also in function of its rate of change, which takes care of the most common type of anticipations as to the immediate future: producers' expenditure molds consumers' expenditure, not only by supplying households with money to spend, but also by shaping their willingness to spend; and this willingness largely depends on the rate of change of income streams which prevails at the moment.[1] The

[1] Even the relation, per period of account, between firms' expenditure and households, receipts is, owing to lags and to payments between firms, not simple or invariant, let alone one of identity. Still more important is it to observe that, although there is no doubt about the direction of the influence of household's receipts on household's expenditure on consumers' goods, there is plenty of doubt about the form of this function also. It may vary widely as between nations and situations. The French peasant and small bourgeois, as well as—perhaps –the "Scotchy" New Englander of old, may provide instances of a limiting

question of introducing a lag—which would in any case be a short one—need not be touched at our stage of approximation.

The most comprehensive series of expenditure is the series of total debits to banking accounts. In the United States this total may be said to approach the sum of all monetary transactions, although an amount of transactions still remains unrecorded which it is hardly possible to estimate accurately and which of course varied greatly in the slow evolution of banking habits during 150 years before the war. It should be added that, exactly as some monetary transactions fail to show up in debits, so many

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case in which increase in receipts entirely fails to induce an increase in consumers' expenditure. Again, sudden increase in monetary receipts, due, for instance, to the incipient stages of inflation, may sometimes also fail to produce a correspondingly great effect—that is why prices rise less than balances or quantity of fiat money during those stages or why balances themselves rise less than in proportion to government spending, the new access of wealth being partly applied to the repayment of debt. But opposite cases seem to the writer, under ordinary circumstances, to be much more frequent and important. The working hypothesis which we shall mainly rely on is, hence, that consumers' expenditure increases more than proportionately whenever household receipts increase and decreases more than proportionately—particularly if durable consumers' goods play a great relative role in consumers' budgets—whenever household's receipts decrease. This comes practically to saying that there is a general tendency for the average household to outrun its "income" in all phases of all cycles excepting depression, in which, however, forced dissaving and subsidies counteract the effect to some—historically variable—extent. This hypothesis rests on the following observations, which however, it will be observed, are all drawn from "modern times"—roughly, from the time since 1900.

1. The writer thinks that he has indeed observed a type of industrial family (and, in some countries, of peasant family, as stated above), though much more clearly in Austria, England, France, and Germany than in this country, which keeps to a very rigid style of life, mainly expressed in its family houses and the way they are run, and varies its expenditure but little as between prosperity and depression. The vast majority of all classes behaves differently. One stratum (witness the strongly cyclical character of the jewelry, theater, and hotel trades) obviously spends the speculative and other temporary gains - the former are not income in our sense—of prosperity on consumers' goods. The wage-earning stratum seems to the writer to display the same bent and to try in times of rising wages to spend "all it can." This is true even for noncyclical increases of income, such as periodically occur in the salaries of state employees; in Germany, at least, they seemed to spend more than the increase each time their salaries were augmented.

2. All those impressions are supported by the growth of the practice of buying on installments, although this practice would not, in itself, suffice to establish them.

3. It is a fact that the general net indebtedness of households increases in times of rising incomes, though this fact can be fully proved for postwar times only.

4. The presence of a tendency in the vast majority of people to spend on consumers' goods whatever they can, excepting depression, is suggested - though again not strictly proved—by the monthly and weekly rhythm in retail trade. (*cf.* Gruenbaum, Umsatzschwankungen des Einzelhandels, Sonderheft 10 of the Berlin Institute's *Vierteljahrshefte*, 1928.)

5. The contrary impression, which so many economists seem to have, can be traced to the one item to which the above clearly does not apply, *viz.*, profits in our sense.

We shall return to the subject presently, and again in Chaps. XII and XIV.

commodity transactions fail to give rise to monetary transactions—especially the "transactions" that consist in producers', particularly farmers', "selling" part of their own produce to themselves. This debit series is, however, not available for the prewar time. Instead, we have the series of bank clearings, which must be expected to differ from the true figure of debits that it is supposed to indicate, and even this we have only for this country and England. But the American figure has been shown to display so close a relation to the figure of debits since the war, that we may with some confidence use it. In countries and for times in which banking is highly concentrated the situation would, of course, be less satisfactory.

Apart from the changing relative importance of the amount recorded and various difficulties of a technical nature into which we cannot enter here, it has to be recognized that the total is, as such, a composite of very little significance. Debits arising out of transactions between banks have a special character and should be excluded, as should—for some purposes, though not for others—debits to public accounts. Moreover, the total records every charity and every tax payment, as well as disbursements from incomes which are not paid out by firms. However, some of these elements are not important enough to distort the picture; others are as a matter of fact excluded. What seriously impairs the value of the clearings series is the impossibility of separating stock exchange and real estate transactions from the rest. All we can do about this is to adopt the familiar distinction between New York and Outside Clearings, although the former contain all the transactions of the world's greatest industrial and commercial center and the latter, a very considerable element of stock exchange business and of speculative transactions in general. Similarly we must, in the English case, pin our faith to the distinction between town clearings at the London clearinghouse and provincial clearings plus country clearings at the London clearinghouse.

Bearing in mind, then, that they really measure something different and, in particular, that they record the value of every element of every commodity as often as it changes hands, against payment by check, in the course of production and trade, we must resign ourselves to using Outside Clearings[1] (Mr. Frickey's series mainly) to indicate variations

[1] Series are available monthly for a varying number of cities, which increased to 159, from the *Financial Review*, the *Public*, the *Commercial and Financial Chronicle*, and other sources. Mr. Snyder's compilation goes back to 1875 (*Journal of the American Statistical Association*, 1924). He corrects by his general price level. Mr. Frickey's monthly series for seven selected cities (Baltimore, Chicago, Cincinnati, Cleveland, Philadelphia, Pittsburgh, San Francisco) is the only one to take account of the fundamental difficulties of this material, consisting in the effect of new clearinghouses emerging from time to time, before 1903 (see E. Frickey's paper in *Review of Economic Statistics* for October 1935). Some experimentation has quickly shown it to be, because of this and other virtues, the

in system expenditure. Some idea of the extent of the risk we run when reasoning as if outside clearings represented the dollar volume of physical production may, however, be derived from inspecting Chart XXIII. Whatever confidence we may place in the evidence it presents, it certainly goes some way toward allaying extreme apprehensions. The covariation between Outside Clearings and Physical Output of Industry times the Price Level is, given the statistical independence of the respective materials, in itself an interesting result. Possibilities of very simple "theories" seem to open up at this point.

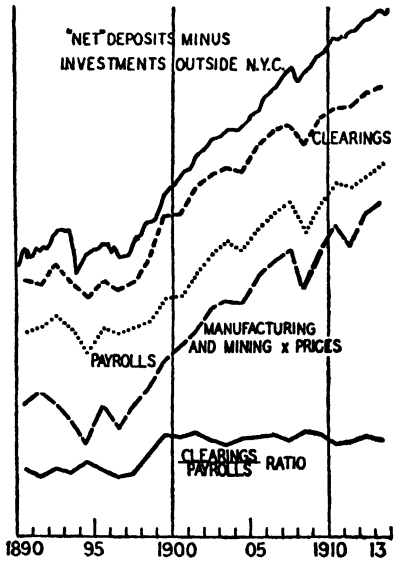


CHART XXIII.—United States (see Appendix, p. 1059).

System expenditure makes a natural and systematic series of the "velocity" (or rate-per-time) type, which is obviously cyclical. It is a primary but consequential phenomenon. There is no need to stress that it is primary: increase in system expenditure is not only one of the most obvious elements in the picture of any prosperity, but also the most important factor in producing the symptoms that we associate with prosperities. All the more necessary is it to emphasize that it is nevertheless consequential: no antecedent or initiative increase in system expenditure—induced for instance by some chance event or by the initiative of banks or governments—is required in order to start the extrepreneurial activity that propels the system away from any preexisting neighborhood of equilibrium. This activity directly implies and indirectly induces all that additional spending we observe in prosperities, but the innovations themselves are independent of it in the sense that they are profitable at the system expenditure in the preexisting neighborhood.[1] If they are

best one to use, and, with one exception, it has been primarily used by the writer in his work on system expenditure.

[1] See the analogous statement about the price level (Chaps. IV and VIII). There is, thus, so far neither necessity nor room for the assumption that either "spending" itself or the sphere of money and credit which provides the means for spending harbors any cyclical mechanism of its own. If our analytic schema be accepted, all the features of the behavior of spending and of credit in a normal cycle can be accounted for without assigning to them any but an adaptive role. Since the above contains our solution of a much-debated problem—it might be termed "the riddle of spending"—and since the opposite view is, in one form or another, almost universally accepted and not without influence on policy, the reader is invited to recall once more the premises of the statements in the text.

not, they are "maladjustments," which may have to be liquidated subsequently. Similarly, system expenditure slackens or may even absolutely decrease in recession, and this not only constitutes one of the most regular features of recessions but also produces others. But it is itself induced by the slackening of innovating activity and by autodeflation, both of which again are independent of it in the sense that they come about without spending or credit taking the initiative in calling a halt. No doubt there may be, in any particular situation, also a pull of the monetary bridle. But (see Chap. IX) such a pull is not necessary in order to account for the occurrence of an "upper turning point," which is perfectly understandable without it and does not, in system expenditure any more than in anything else, constitute a distinct problem calling for special solution and requiring the introduction of facts extraneous to the mechanism of innovation. In the midst of increasing rates of expenditure, and in the absence of all extraneous limits—monetary or other—business could and would recurrently start deflating *itself* by virtue of the working of that mechanism, and this indeed means decrease in rates of increase or absolute fall of expenditure, but does not presuppose that it occur from other reasons. Failure to realize this leads to many blind alleys.

Expectation for the cyclical behavior of system expenditure seems to follow arithmetically from the behavior of price level and output. Expenditure is, however, not only a monetary expression, but also a monetary quantity that exists and behaves as such, so that our expectation about it must be formed independently. In the "pure" model it would rise in prosperity and fall to its previous amount during liquidation. In the four-phase cycle, expectation for three out of the four phases is too obvious to detain us, but for recession it is necessary to recall that owing to the facts, first, that entrepreneurs' repayments do not actually go to the length of eliminating their debts and, second, that other borrowing partly, wholly, or more than wholly[1] replaces entrepreneurs' borrowing, our expectation loses its definiteness. All we can say is that system expenditure will increase in prosperity more and in recession less than total output, although we may also hazard the guess that it will increase in the recession of every cycle at a smaller rate than—due attention being paid to the simultaneous phases of the other cycles—in the preceding prosperity. The resulting trend is, to be sure, still due to the working of our process, but it nevertheless differs in nature from the result trends which we observe in price level or output. These express fundamental properties of the capitalist system and would be present even in a world

[1] That will depend on the speed of the process of repayment and of the process of exploitation of the new investment opportunities opened up by the innovations of the preceding prosperity, and on how this "pushing into new economic space" is being financed. This is not without some suggestions as to regulative and remedial policy.

conforming to the pure model, while the result trend in system expenditure would be absent in such a world and enters our picture only at the level of the second approximation.

Such as it is, that result trend is of course but imperfectly rendered by the descriptive trend observable in our graph. The development of deposit banking, the change in habits of payment incident thereto, and all the changes in the institutional framework of the currency and in the

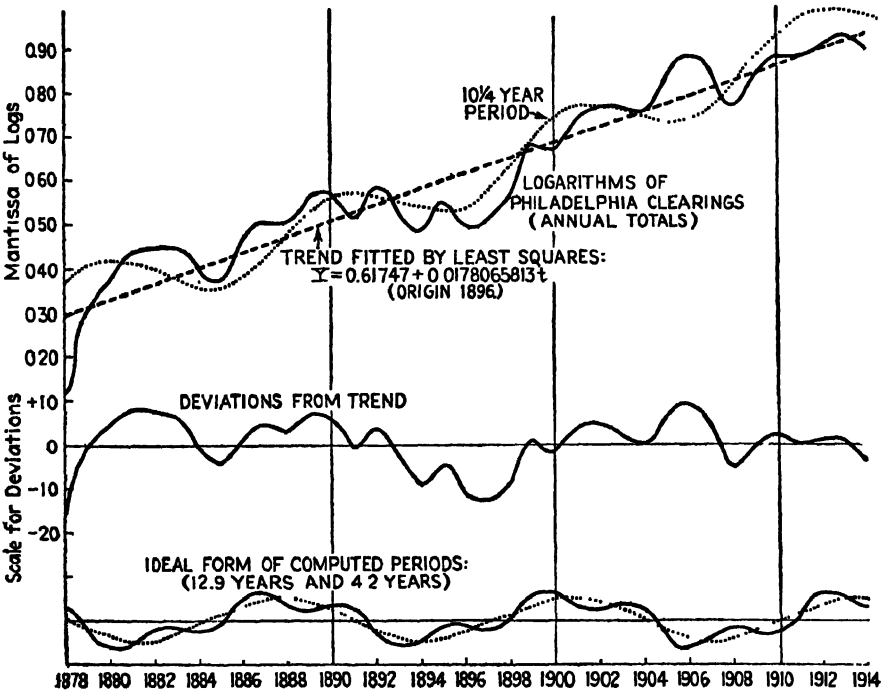


CHART XXIV.—(See Appendix, p. 1060.)

rate of gold production also help to shape the latter. It must be recognized, moreover, that the effects of all these factors are clearly not additive and that the effects of changes in the quantity of legal tender, in particular, cannot be dealt with in the way which would have seemed—and still seems—the obvious one to adherents of the quantity theory in any of its primitive versions. The circumstance that none of those factors is independent of our process may perhaps be pointed to in explanation of the fact that, barring times of war inflation, the behavior of our series is, nevertheless, quite satisfactorily accounted for by our model and that it does not obviously indicate any other than a passive role of money and credit.

Chart XXIV is presented for the sake of displaying an ingenious method rather than for the results that can be gathered from it. In order to apply Dr. Georgescu's method (Chap. V), it was necessary (the other two differentiations which would have had to be added would have accumulated errors to a dangerous extent) to eliminate a descriptive trend fitted by least squares. The reader is invited to record and weigh this fact against what has been said[1] about this practice in the course of our considerations on statistical method (Chap. V). Moreover, the material covers too short a span to allow any formal method to show the Kondratieff, or even to give reliable results as to the precise periods, or any precise properties, of the shorter cycles. However, the hypothesis of a single cycle yielded a period of 10¼ years, which, the writer holds, is strong evidence both of the presence of a cycle of about that length and also of its general properties' conforming to our expectations. The second step of this analysis turned out less satisfactorily. When the material was analyzed on the assumption of the presence of two cycles, the resulting periods were 12.9 and 4.2 years respectively. We should not take it too tragically that these figures exceed substantially what we consider to be the average periods of the Juglars and the Kitchins. The fewness of the cyclical units of both kinds may account for that, and the value of the evidence for the presence of two cycles of about these periods is not greatly impaired thereby. But it is more serious that the introduction of the hypothesis of two cycles does not improve the picture of the phenomenon yielded by the single-cycle hypothesis. The "fit" is somewhat improved, but not much.[2]

Turning to Chart XXV, we will first of all note the fact adverted to above that not only the properties of the clearings series to be expected from our model do actually show, but also that it behaves much as if no other influences than those embodied in our model had acted upon it. For 1875 to 1913 this is actually more nearly true than for any other period within our range of vision. But we should not have been surprised if such outside disturbances as nevertheless occurred had asserted themselves more clearly. Detailed analysis no doubt reveals some of them. The steepness of the ascent from 1878 has, for example, perhaps something to do with the certainty of "sound money" and affords in any case an interesting lesson about how business reacts in the face of what many economists would describe as deflationary tendencies. The ascent from 1897 may have something to do with gold or, more

[1] The reader will reflect however that, in statistics as in life, the argument against Sin is not, in good logic, weakened by the observation that the preacher sins himself.

[2] The results of the two tests carried out are not shown in the graph. It should be mentioned, that United States and English clearings were among the series by the analysis of which Mr. Kitchin first showed the existence of the cycle which we refer to by his name. He also showed that "two or three" of them seem to form a higher unit (our Juglar).

plausibly, with the practices of trust companies, but would be understandable without either. Nothing indicates *obviously* the presence of other than our evolutionary factors.

The long wave could not, in the absence of other information, be discerned in this graph any more than in Chart XXIV, since our series covers only the end of the second (1875 to 1897) and the beginning of the third Kondratieff. But if we tried to fit, by the method of least squares,

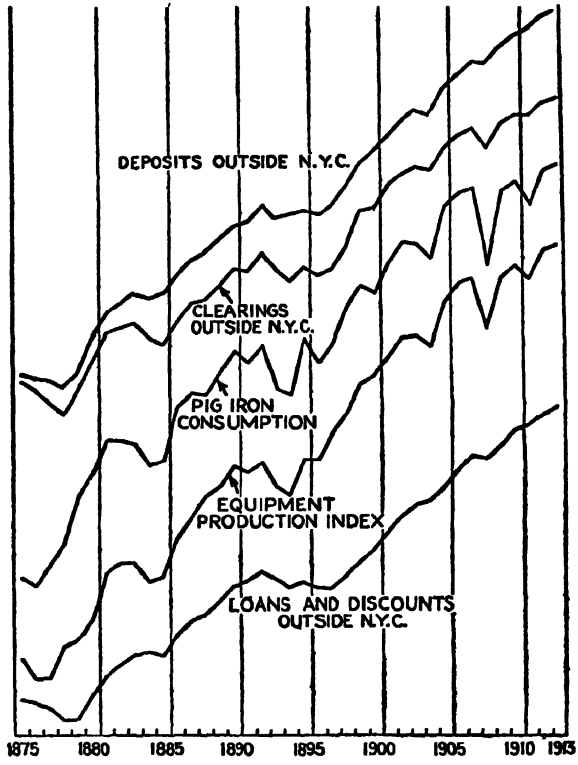


CHART XXV.—United States (see Appendix, p. 1060).

either a straight line or a second-degree parabola, we should discover, as others have before us, that for some reason a "break in trend" occurred in the nineties. If thereupon we proceeded to fit two straight lines, the one to the interval from 1875 to 1897 and the other to the interval from 1898 to 1913, we would find that the gradient of the former is smaller than the gradient of the latter. It is submitted that, since we know about the Kondratieffs from other evidence, historical as well as statistical, and since that behavior of clearings conforms to what we should expect it to be in those intervals, there is some point in interpreting it as a Kondratieff effect. This would not only solve the problem

of that break in trend, but also enable us to account for the fundamental contours of United States clearings in that period by a single set of principles. Whether this is more convincing than an explanation in terms of gold production, is for the reader to decide.

The shorter cycles stand out well and show in the two intervals in the way we should expect them to show in Kondratieff depressions, revivals, and prosperities. The series is, in fact, extremely "responsive."[1] We behold at the beginning the shrinkage of system expenditure incident to the deep depression of the seventies. Then follow two very well-marked Juglars (1879–1888, 1889–1897) within each of which three Kitchins are clearly discernible. The strong swell of the prosperity of the third Kondratieff dominates the picture after 1897 and tends to iron out the other two cycles, which assert themselves nevertheless. The relation of the clearings series to others follows from what has been said before in this and preceding chapters. As regards timing, the reader should again be warned not to form rash expectations about consistent sequences or to draw inferences from a failure to find such sequences. For instance, he may feel tempted, considering that system expenditure is intimately related to the initiating impulse of the cyclical process and that it is itself the immediate source of many of the symptoms of general prosperity or depression, to expect that variations of clearings should precede variations in most other cyclical quantities and, especially, variations in price level. As a matter of fact, they mostly do, within short-time fluctuations, by a few months. But even apart from internal irregularities, the influence of speculative anticipation, the fact that prices are made by contracts while clearings reflect actual payment, and so on, there is no theoretical reason for expecting precedence of clearings for all phases of a cycle but only for the positive ones, and for these only with a proviso as to the simultaneous phases of the other cycles. Statistical measurement of covariation by means of formal methods is bound to give disappointing and inconclusive results,[2] particularly if the method used implies the single-cycle hypothesis.

Much more interesting than variations of total system expenditure, are the variations of its two principal constituents—consumers' and producers' expenditure. But even for postwar times we are far from having adequate data from which to compile separate indices of them, while for prewar times we must not be under any delusion as to the value

[1] *Cf.* Professor Crum's Interpretation of the Index of General Business Conditions, *Review of Economic Statistics*, Supplement 2, September 1925.

[2] The Harvard Committee's correlation between outside clearings and Bureau of Labor Statistics prices at wholesale (both corrected for seasonal variation and trend), for 1903–1918, is described as Fair with a four months' lead of poor consistency in the former (*Review of Economic Statistics*, 1919, p. 184).

of any inference we may draw from such material as we have. Efforts in that direction are nevertheless among the most urgent desiderata economists have to address to public and private organizations commanding the necessary means. What we can do here falls very far short of what might be accomplished even now.

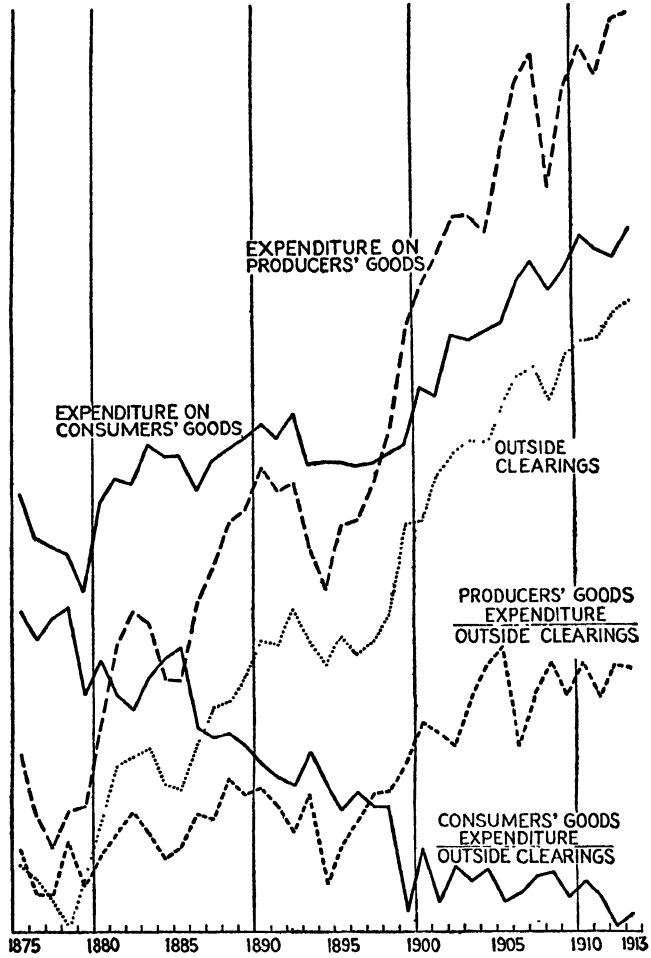


CHART XXVI.—United States (see Appendix, p. 1060).

A rough indication of the behavior of consumers' expenditure, the most important figure of monetary theory, may be derived from the series of total wages disbursed as represented by pay rolls, since this is not only the biggest individual item in the sum total of incomes, but also the one which may be expected to bear a closer relation to actual expendi-

ture on consumers' goods than any other. In spite of all qualifications which have to be made but are too obvious to warrant restatement, we may again compare wage bill and outside clearings (Chart XXIII). The line at the bottom of the chart will help in interpreting the result. The sharp rise of the clearings-pay roll ratio at the beginning of the current Kondratieff is particularly instructive. Since the question of how the sum total of taxable incomes is related to consumers' expenditure is controversial, we will not press it into the same service.

Another indication of the behavior of the two main constituents of system expenditure is given (Chart XXVI) by the index of physical quantity of consumers' goods times the index of consumers' goods' prices and the index of physical quantity of producers' goods times the index of producers' goods' prices. Our chart is unsatisfactory in many respects, and no confidence can be placed in the details of the picture. But however much progress in the direction of exact measurement we may expect from more thoroughgoing investigation which government agencies or research groups might undertake, it is extremely unlikely that it would result in substantially different contours or that errors should have systematically worked so as to give spurious support to our theoretical structure.

We notice, first, that Juglars and Kitchins show well in both the dollar values of consumers' and in the dollar values of producers' goods, which we assume to indicate consumers' and producers' expenditure. In the case of the Kitchins it is, no doubt, necessary to recollect what has on previous occasions been said about the likelihood of their being "ironed out" in very strongly marked phases of the longer cycles, but they remain always discernible, at least in rates. The rise of the third Kondratieff, 1898 to 1907, is impressively reflected. Second, we observe the difference in amplitudes of fluctuations, a familiar feature, which need not detain us. Third, it is seen at a glance that producers' expenditure dominates the contour of the clearing series. Fourth, producers' expenditure can on the whole be said to precede, although not consistently. For reasons repeatedly mentioned we would attach little importance to this, even if our chart were as perfectly exact as it is defective. We have seen reason to question the validity of causal interpretation of statistical sequences; theoretically we cannot with any confidence expect that producers' expenditure should precede in time as well as in logic, for, effects on consumers' expenditure asserting themselves quickly, we might well find roughly simultaneous covariation blurred by secondary and random influences rather than a consistent sequence conforming to that logic; and, finally, the case well exemplifies the possibility that a "logical" sequence be inverted by anticipation, for even if consumers' expenditure were the prime mover of the process, producers' anticipations might

easily make producers' expenditure move first.[1] Without, however, receding from this standpoint, we may still notice a possibly significant fact. If the reader smooth both curves by freehand, he will get a picture that roughly renders the Juglars and the Kondratieff effect. And within this picture, precedence of producers' expenditure is unmistakable and consistent. Inconsistencies of lag may thus be shown to be due to the shorter fluctuations. Since these are particularly exposed to disturbing influences and fundamental relations work themselves out more clearly in the longer cycles, that fact may mean something, after all.

Now, these four features certainly tend to justify—no proof is ever possible by statistics alone—our decision to consider producers' expenditure as the "active" element in total expenditure. We move on common and familiar ground when we say that expenditure on plant and equipment is the "active" factor in producers' expenditure. But if we go on to say that expenditure on the creation of new production functions—innovation—is the active element in total expenditure on plant and equipment, we are leaving this terra firma, and there is every reason for the reader to examine the nature of this third step. It is not, like the two others, a formulation, but an interpretation of time-series fact. It adds an explanatory hypothesis. But this hypothesis justifies itself, by solving a problem presented by time-series fact—namely, the problem of the wavelike character of expenditure on plant and equipment—and by doing this, through its appeal to intermittent entrepreneurial impulses, in a way that leads us out of the circle of *perpetuum mobile* theories.[2] Moreover, it follows from a schema all the expectations from which are borne out by time-series fact, where such fact is available. Finally, it is fully verified by economic history: we simply *know* what innovations were responsible for the humps in the curve of values of producers' goods from 1879 to 1882, in the late eighties, and in the late nineties, or at the beginning of the century.

Attention is called to the two lines at the bottom of Chart XXVI, which present the fluctuations of consumers' and producers' expenditure per dollar of system expenditure. As we might expect, they demonstrate

[1] Compare again the discussion between Professors Frisch, Hansen, and Clark on Capital Production and Consumer-taking, *Journal of Political Economy*, 1921–1922.

[2] The problem may also be formulated as follows: How is it possible for prosperity to start, let us say, from perfect equilibrium, without an impulse being first given to productive activity by consumer's expenditure? It would, indeed, be impossible but for innovation's breaking through the existing system of production functions and creating an opening for further outlay—new profitable opportunities for the expansion of producers' expenditure, or, as we may call it, new "investment." Hence the mere fact of those recurring bursts of "investment" might be held to furnish verification of the presence of what is, unless they are explained by external factors, their only adequate cause, the element that induces all others.

with particular emphasis what has just been explained. Both the rhythm and the mechanism of our process—in particular, the character of prosperities as periods of investment and the character of recessions and revivals as periods of consumers' harvests—assert themselves very instructively. But there is also another movement—the long-time and systematic change in the relation between consumers' and producers' expenditure, which we already have had occasion to observe in the realm of physical quantities, and which lends itself so readily to interpretation in the sense of Boehm-Bawerk's theory. The fact that investment gains on consumers' expenditure in prosperities without ever losing ground in the long run, which stands out particularly for the period of the Kondratieff upswing, accounts for the only long-run difference there is between the behavior of producers' expenditure and clearings. Outside Clearings in turn should now be compared with outside deposits and loans; but before taking up this matter, we will digress, in order to discuss the behavior of total income and of wages.

C. National Income and Wages.—1. The familiar difficulties which we all experience in defining National Income are of course due to the fact that it is not a technical term wedded to one definite use but a word of common parlance that is loosely used for a great many purposes which cannot be served equally well by a single definition. For our purpose we need not discuss the general merits or demerits of inclusion or exclusion of annual services of durable goods or of the values of services rendered by the individual household to itself or of the values of receipts in kind or of the gains from cooperative purchasing, or any of the other questions that arise in defining national income and in evaluating it statistically, although some of them will have presently to be mentioned for the special case of wages. At the moment, we will simply think of a monetary quantity (hence, not *identical* with value of output) that consists of the receipts of households from the sale of services, personal or other—substantially wages, rents, quasi-rents—plus profits and interest, but exclusive of gains from the sale of capital assets, appreciation of inventories, and so on. This total is equal to consumers' expenditure (on durable as well as on transient goods), households' investments (for definition see Chap. III, Sec. A), and tax payments, minus households' net borrowings and expenditure of capital gains, plus sums that are not spent at all (which we know can occur equally well in the cases of sums earmarked for consumption, as in the cases of sums earmarked for investment), and it makes, for most purposes, a highly inconvenient composite. But it serves for our purpose.

The corresponding time series is obviously natural, primary, consequential, systematic, and cyclical. It displays a result trend in the same sense as system expenditure, that is to say, only because and as far as the

cyclical process of evolution expands the elastic strings of the monetary ligamina for good. Barring this, there would be no result trend in it, and national income in that sense would, in the process described by the pure model, return in each neighborhood to its value in the preceding one, which it is not superfluous to mention in view of an application to be made of this proposition in the theory of the cyclical behavior of the wage bill.[1] In every four-phase cycle we shall still expect, with the usual qualification about the simultaneous phases of the other cycles, that our total increases in prosperity more than does the output of consumers' goods. But expectation as to its behavior in recession is uncertain beyond two points: we shall predict that if it increases at all, it will do so at a rate that, on the one hand, is smaller than in the preceding prosperity and, on the other hand, is smaller than the rate of increase in output of consumers' goods. In depression it will, in general, fall—at least in "deep" depression—and in recovery it will return to equilibrium amount.

The only data at all adequate for the purpose of compiling a series of national income, are, for prewar times at least, those supplied by the materials of the English and the Prussian income taxes.[2] The first, covering the whole period since Sir R. Peel's reintroduction of the income tax, is the one we shall use, because the second, the figures of which should, owing to the superior technique of Miquel's income tax act, really be more valuable, covers only a little more than the years of the third Kondratieff.[3] Of course, the series of taxable income is not what we want and can only in a very rough way indicate the movement of the quantity we are interested in. Taxable income covers both less and more. Since the wage bill or, more correctly, that part of the sum total of wages

[1] Strictly speaking, it would, for that proposition to be borne out by statistical fact, also be necessary that the sums saved and the sums paid in taxes from income were equal in both neighborhoods. For instance, an increase of the income tax for the purpose of increasing the salaries of public servants would increase national income as above defined and an analogous proposition would hold true for savings. This is one of the reasons why this definition has been called inconvenient in the text: a definition that entails the consequence that national income falls if the sum total of net saving falls has certainly no claim to general acceptance.

[2] There is, for the United States, an estimate by the Brookings Institution of national income paid out, for 1901 and for 1910 to 1914; and by the Cleveland Trust Company for 1902 to 1909 (see *Bulletin of the Cleveland Trust Company* for Apr. 15, 1935). See also, W. I. King's National Income and Its Purchasing Power, 1930. But in an extremely rough approximation, railroad gross earnings may perhaps give an index; see A. H. Cole, A Monthly Index of Railroad Earnings, 1866 1914, chart comparing this index with Partington's quarterly series, on p. 41, *Review of Economic Statistics* for February 1936. Professor Cole's index is reproduced on Chart XXIX.

[3] There were other income taxes in German states, some of which—for instance, the one of Saxony and the one of Baden—give useful indications. See a study on Einkommenschwankungen vor dem Kriege by the Institut für Konjunkturforschung, *Vierteljahrshefte*, 1927. Results do not differ from those that we are about to derive from the English series.

that is not subject to the tax, could be added from 1860 on, and since that part of "unearned" income that goes to income receivers below the exemption limit may be estimated from the data of the Inland Revenue reports, this is less serious than the effect of exemptions, allowances, and abatements, on the one hand, and inclusion of various items that ought not to figure, on the other.[1] It must also be borne in mind, of

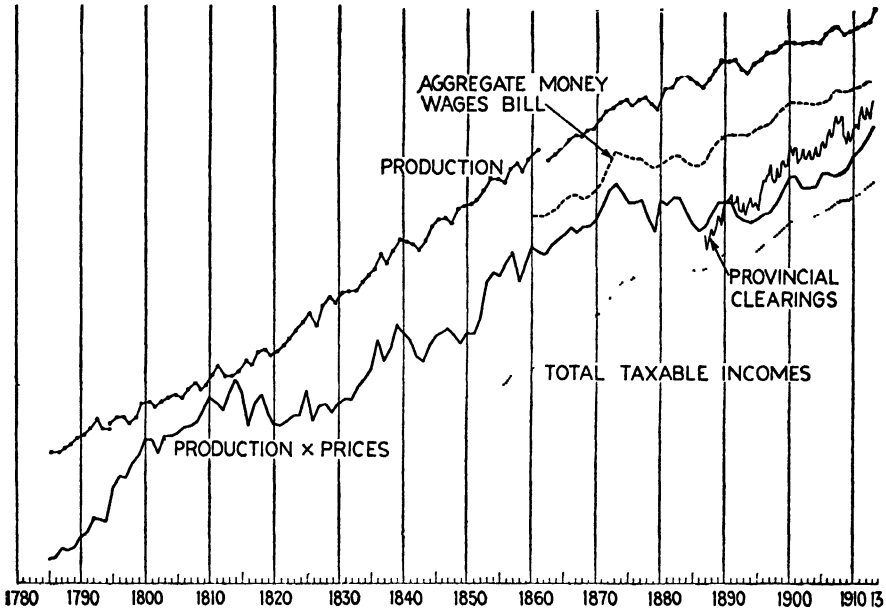


CHART XXVII.—United Kingdom (see Appendix, p. 1060).

course, that income from foreign sources cannot be expected to vary as home-produced income.

The picture presented in Chart XXVII cannot hence be implicitly trusted. It is, nevertheless, not very hazardous to say that it bears out expectations as to Juglars in which total taxable income in fact displays a tendency to rise in prosperities and to stay at about the figure reached, or very little less, for the rest of each cycle. The reader can easily satisfy himself of this by recalling the dates of the Juglar prosperities. Since the technique of the assessment of business profits has a smoothing effect, we shall understand that we see little of a Kitchin movement, but the behavior of the series in the Kondratieff wave is contrary to expectation up to 1873.[2] From that year on until 1898 we observe a remarkable, if

[1] Much work has been done in order to improve the material and to distill from it really relevant figures. See, in particular, Sir G. Paish's paper in the *Journal of the Royal Statistical Society*, 1909; and Sir J. Stamp's British Incomes and Property.

[2] The strong increase of total taxable income from 1860 to 1873 indicates the presence

rough, parallelism of "trend" with the production series, while there is none with the series of production times price level. From about 1876 to 1913 parallelism with the wage bill is no less remarkable. This fact is in itself sufficient to dispose of some of the more primitive errors about the relation of wages and other incomes. The relation to provincial clearings is what we should expect it to be.

The behavior of the series of total taxable income is obviously dominated by business profits in the usual sense, as the reader may see by referring to Chart XXVIII. The "profits" there charted are simply from the data of Schedule D, which include not only interest, royalties, and the like, but also a large amount of income that ought to be classed with wages. The distinction made according to formal rules between "earned" and "unearned" income does not, of course, help us at all. We may look upon that item as roughly rendering the income from "business." But it is far removed from profits in our sense, which form an unknown and varying fraction of it. It is again by way of an interpretation, which is not gleaned from, but added to, statistical fact, that it can be asserted that entrepreneurial activity is what directly and indirectly accounts for the waves we observe. For Germany we have also a fairly long series of dividends (per cents of nominal capital), see Chart XXXVIII. Dividends are of course not profits—still less are they profits in our sense—but the relation is close enough to permit taking them as an indication. Perhaps we need not stress the proviso usually made about lag, for the state of affairs at the moment of the decision about dividends in many cases influences that decision as much as the results achieved in the preceding business year do. On the other hand, the policy of equalizing returns to shareholders, which prevails in other cases, naturally dampens fluctuations.

2. We must go more fully into the behavior of wages. There is a considerable amount of information for earlier times, sometimes permitting alignment into time series, practically always enabling us, in spite of all difficulties about currency and prices, to discern the roughest contour lines, at least for Germany and Western Europe.[1] By them-

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of a disturbance external to our model. Since the anomaly obviously links up with the anomaly we observed in the price level series, we may attribute it to gold. When gold production turned down, total taxable income assumed what we could conceive to be its normal behavior.

[1] E. J. Hamilton, Money Prices and Wages in Valencia, Aragon, and Navarre, 1359–1500, 1936; and Prices and Wages at Paris under John Law's System, *Quarterly Journal of Economics* for November 1936. See also, besides the familiar French and English works on the subject, such as Thorold Rogers' or Levasseur's, E. W. Gilboy, Wages in Eighteenth Century England, 1934; and Schmoller's handy survey (antiquated in part, of course), Tatsachen der Lohnbewegung, in his *Jahrbuch* 1914, republished in the second edition of his Grundriss, particularly valuable because of the insistence on the institutional setting,

selves, of course, those data mean very little, particularly with respect to any welfare considerations. Recent work has done much to enlighten us about the eighteenth century, notably in England, and more may be hoped for in the near future. But at every step so far, we find room for difference of opinion as to questions of fact.[1] Mrs. Gilboy's book brings out sharply that even England was then not yet, with respect to wages, an economic domain in the theorist's sense and that wage rates at times even moved in different directions in different parts of the country. We do not venture to go beyond stating that, on the whole, money wage rates started to rise, or in some cases continued to rise, after 1750; that they rose during the prosperity phase of the first Kondratieff; while real wage rates on the whole rose very much less, if indeed they rose at all.[2] For the nineteenth century we rely on the work of Mr. Wood and of Professor Bowley, which, for agriculture and building, also includes some eighteenth-century data.

For this country we have scattered information for earlier times, most of which is reproduced or noticed in V. Clark's work. Nation-wide figures that are at all reliable do not date back of this century. We may mention, however, *Bulletin* 499 of the United States Bureau of Labor Statistics, which attempts to cover available material from colonial times to 1928 and *Bulletins* 59, 65, and 77, for the time from 1890; the National Industrial Conference Board studies on the subject, as well as the work of Mr. Rubinow and Professors Hansen and Wolman; but especially Professor Paul Douglas's treatise on Real Wages in the United States, 1890–1926, to which the present writer is mainly indebted. We are very badly off for Germany until almost the end of our period. There are, however, more than a dozen individual series, of which the wages of miners in the basin of the Ruhr, beginning in 1850, is the most interesting one.[3] We have confined ourselves mainly to the English

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which goes far toward bringing out the true meaning of the wage data themselves. F. Simiand's work, Le Salaire, l'évolution sociale et la monnaie, essai de théorie experimentale (sic) du salaire, 1932, much disfigured by methodological dissertations of doubtful value and highly questionable theorizing, gives French wage rates per day from 1789 to 1930 and very useful documentation. We will mention, finally, the interesting article by D. Knoop and G. P. Jones, Masons' Wages in Mediaeval England, in *Economic History* for January 1933; see chart on p. 486.

[1] See, for example, the controversy between Mr. Hammond and Professor Clapham (*Economic History Review*, 1930, and the latter's reply in the preface to the second edition of his volume on the Early Railroad Age) about the state of things at the end of the eighteenth century and the beginning of the nineteenth.

[2] Much bolder statements are made in Mr. R. Tucker's article in the *Journal of the American Statistical Association* for March 1936. But see E. W. Gilboy's Cost of Living and Real Wages in Eighteenth Century England, Review of Economic Statistics, 1936.

[3] Two books may be mentioned: R. Kuczynski, Arbeitszeit und Arbeitslohn; and Tyszka, Lohne und Lebenskosten in Westeuropa im 19 Jahrhundert. The very good

case. All data are primarily for money rates. Wage bill totals are not available for most of our period and for most countries. But there is an English series from 1860 on, which we owe to Professor Bowley.[1] The American figure we use is but an indicator of the behavior of the national pay roll. Moreover, most wage data fail, even at their best, to represent wages actually paid, which may differ quite considerably from official, particularly trade-union figures, which sometimes veil a fall and at other times represent minima only. It is believed, however, that most of the conclusions of this section are outside of the danger zone created by those and other defects in our data.

All sorts of difficulties arise previously to, and independently of, those that are inherent to our material. We will mention two. There is, first, a difficulty about the delimitation of the returns that should be looked upon as wages. This term means different things to the economist and to the sociologist, and the economic class of wage earners is much wider than the social class to which we refer by the same term. But although part of the salaries and other emoluments of managers and executives should, by the economist, be included in wages, another part is a rough contractual equivalent for, or share in, profits in our sense. An analogous difficulty arises about the incomes of independent business men, while professional incomes are almost exclusively wages. In practice, of course, we simply use the material we have. Second, excepting series of wages paid to homogeneous groups of workers in a given firm or industry or neighborhood, the only natural series we have is the series of the money wage bill. All others are synthetic ones and raise, anterior to questions of deflating, index problems incident to the concept of the average wages of a working population.[2]

We distinguish the Sum Total of Wages (or Payroll or Wage Bill), Wage Rates (per unit of time or product or per head of population employed or of population seeking employment, ideally, per man-hour)

Swedish data are, again, in a class by themselves; see G. Bagge, Wages in Sweden 1830-1930, vol. II of the *Stockholm Economic Studies*.

[1] Tests of National Progress, *Economic Journal* for September 1904, continued by Professor Pigou, see Table III of the appendix to Industrial Fluctuations. Professor Bowley, in kindly permitting the writer to use those figures, expressed a wish that it should be stated that he has revised his treatment in a book which has since been published by the Cambridge University Press.

[2] See particularly A. L. Bowley, Notes on Index Numbers, *Economic Journal* for June 1928, Sec. 6. Differences in behavior of different classes of wages, both in the short and in the long run, which sometimes amount to differences in direction, are, on principle, still more serious than the regional differences, which in some cases are also relevant to the cyclical process (migration of an industry may be an important innovation; migration of laborers from country to towns and vice versa is in part a cyclical phenomenon). Geographically, real wages differ very much less than money wages. The item of rent is sometimes sufficient to produce approximate equality in the former over wide areas.

Labor's Share in the national income or in the value of a unit of product. Wage Bills and Rates must be considered both in money and in real terms. For this purpose, they have to be deflated by an appropriate index of the cost of living, an operation which can, at best, yield but an approximation to the actual command over commodities enjoyed by the various classes of workmen whose wages enter into the average. There is, however, also meaning to another concept of real wages—which should be called by another name, say, Corrected Wages—*viz.*, money bill or rates divided by an index of wholesale prices. This relation has, in itself, an obvious cyclical significance. But inasmuch as that index represents the variations of the price level, it acquires an additional meaning—that of an indicator of the course of wages from which the influence of the monetary parameter has been eliminated. It should be clear that a cost-of-living index, though in most cases it will give broadly similar results, is not in principle qualified to render that service on account both of the commodities that enter into it and of their weights.

The wage bill is not the whole of the income of labor, which consists also of other items both in money and in kind. But for our problem they do not call for consideration in spite of the fact that the importance of public expenditure for purposes directly increasing the monetary and real income of the working class increased considerably in the last decades of the epoch under survey, though not to the extent that it has in postwar times. We similarly neglect the fact that wages do not constitute the whole cost to firms of employing labor. Also, we assume that the merely statistical effect on the wage bill of small shopkeepers, artisans, and so on, "migrating" in and out of employment without changing the economic nature of their income, is negligible. A measure of variation of real wage bill should be made to include increase in voluntary leisure, hence, be corrected for reduction of hours of work, provided, strictly speaking, that hours are not reduced in order to distribute the burden of unemployment. Our failure to do so involves understatement of the historic rise in real wages. Average wage per employed workman corrected for unemployment can, as long as the population seeking employment increases, be taken to indicate how the wage bill has at least increased or at most diminished.

3. All wage series are systematic and cyclical and display a descriptive trend, which is the distorted picture of a result trend. What they describe is a primary and consequential phenomenon that is causal to some of the secondary processes. The facts for which we have to account are easily read off from Charts XXVIII, XXIX, and XXX. It is seen at a glance that on the whole they bear out the expectations which our discussion of the working of our model would lead us to form.

The two important exceptions should be disposed of at once. First, we should have expected money wages—both bills and rates—not indeed to fall, but to increase at a smaller rate from 1856 to 1873 than during the preceding Kondratieff prosperity. We find in fact a setback in the late fifties, but a strong rise from 1862 on. In America (see, also, Professor Mitchell's weighted index of daily wages; but it is safe to infer that national pay roll rose in at least the same proportion) this is of

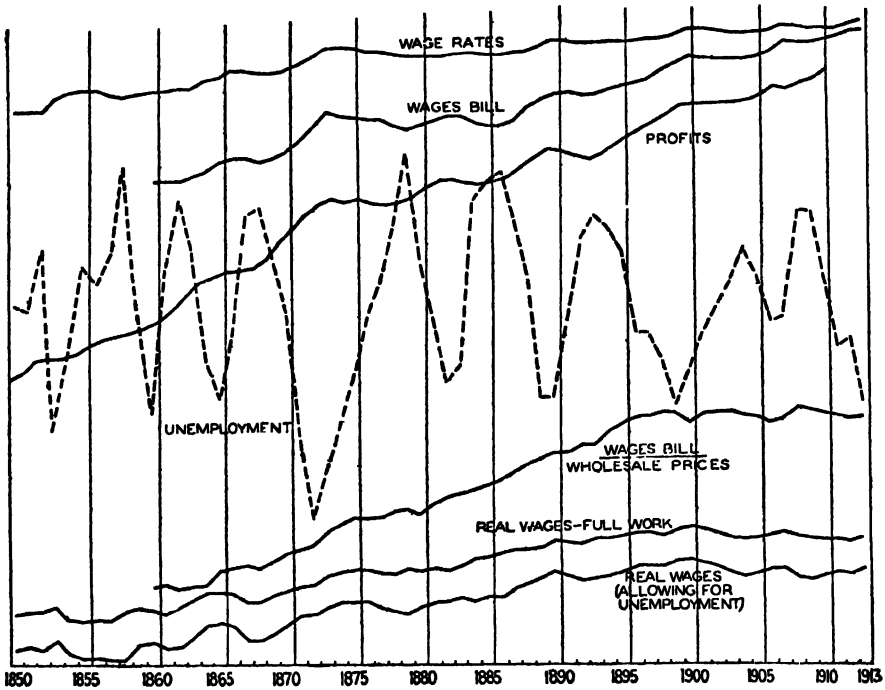


CHART XXVIII.—United Kingdom (see Appendix, p. 1061).

course due to an "external factor," the Civil War inflation. We have discussed the point in our historical survey and will merely emphasize again that the fall in the seventies did not fully correct that deviation. Wages remained permanently on a new level, explainable by the monetary event which also influenced subsequent cyclical behavior. As far as this goes, there is close analogy with the aftermath of the World War. But we find the same phenomenon, though less marked, in England (and the rest of Europe), where it must be attributed to gold. It is significant—both for the theory and the policy of wages—that real rates and bills do not display a corresponding departure from expectation. Second, while in this country and, as far as it is possible to judge, in Germany, money bills and rates behaved according to expectation during

the prosperity phase of the third Kondratieff, in England they rose rather less than we should have expected. This tallies with other peculiarities of the English situation of that time but is less easy to explain than the other case. It coincides, however, as has been pointed out before, with greatly increased public expenditure and taxation. Other-

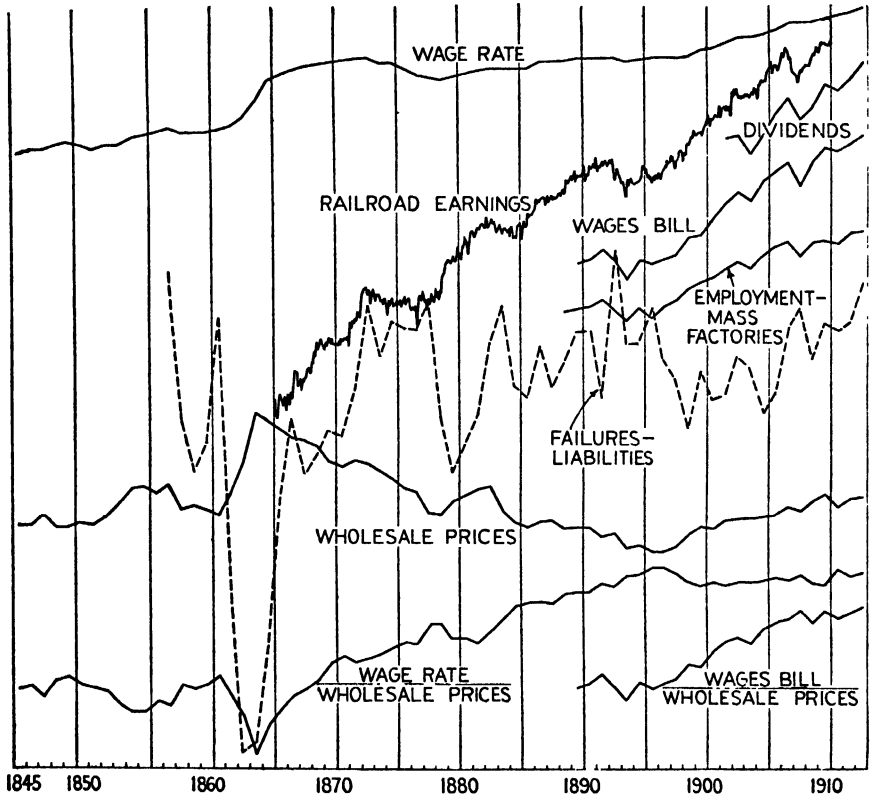


CHART XXIX.—United States (see Appendix, p. 1062).

wise, the cycles are as we should expect. The Kitchins are not more than just recognizable, the Juglars very well marked, the incomplete Kondratieffs show in the same way as in clearings. It is particularly interesting to observe the rhythm in real rates corrected for unemployment, and the way in which Juglars assert themselves, in the various Kondratieff phases, in the deviation from the nine-year moving average; see Chart XXXI.

Bearing in mind, as we must throughout, that we are dealing with yearly and, moreover, not very reliable figures, we observe that absolute fall in the British monetary wage bill (Chart XXVIII) occurred, in the two most serious cases, during those years of the depression phase of

the second Kondratieff in which its sweep was not interrupted by Juglar prosperities. The figures for 1874 and 1875 display but moderate decrease from the peak of 1873 (485 million pounds; 1874, 470; 1875, 465) but the fall went on through the Juglar recovery, right to the threshold of the prosperity of the next, although it at no time brought

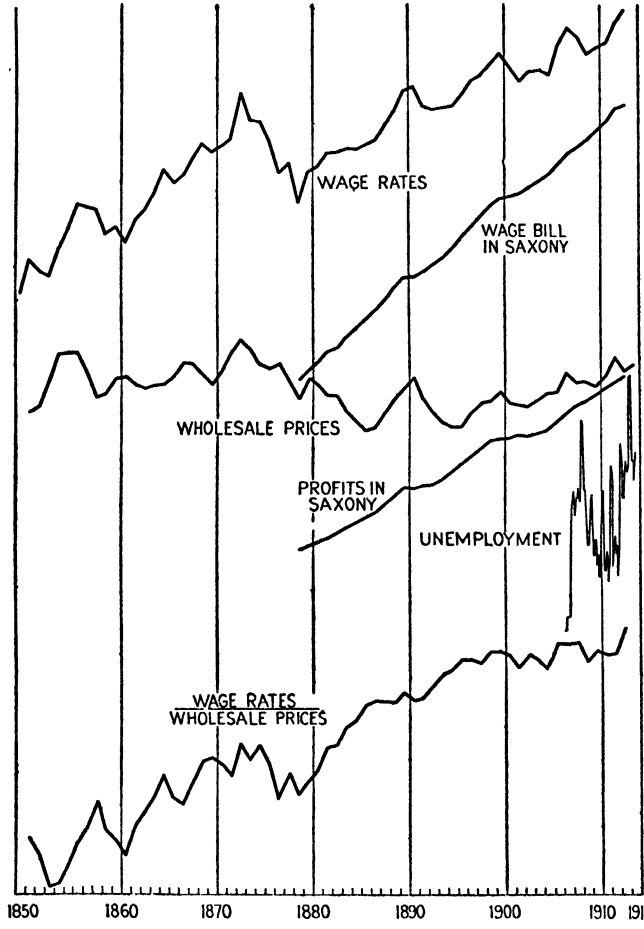


CHART XXX.—Germany (see Appendix, p. 1062).

the wage bill back to the figure of the previous neighborhood of equilibrium (365 million pounds). This prolonged fall is not surprising, however—nor is the fact that the next peak (1882–1883, 470 million pounds) is lower than the one of 1873—and perfectly accords with our cyclical schema. Our first impression to the contrary vanishes as soon as proper account is taken of the principle of interference, when the phenomenon is readily recognized to be quite "regular." This is not to say that gold

production, either directly or by virtue of its responsibility for some of the excesses of 1872, had no share in the matter, but only that it cannot have done more than accentuate what would have happened without its decrease and what might have been toned down had it continued to increase or failed to increase previously. The figures for 1884 and 1885 (the fall was arrested in 1886, and the 1887 wage bill increased again) reflect the conditions that we may, according to our schema, expect to prevail in the depression of the Juglar at the bottom of a Kondratieff. But there are within the series four other cases of absolute

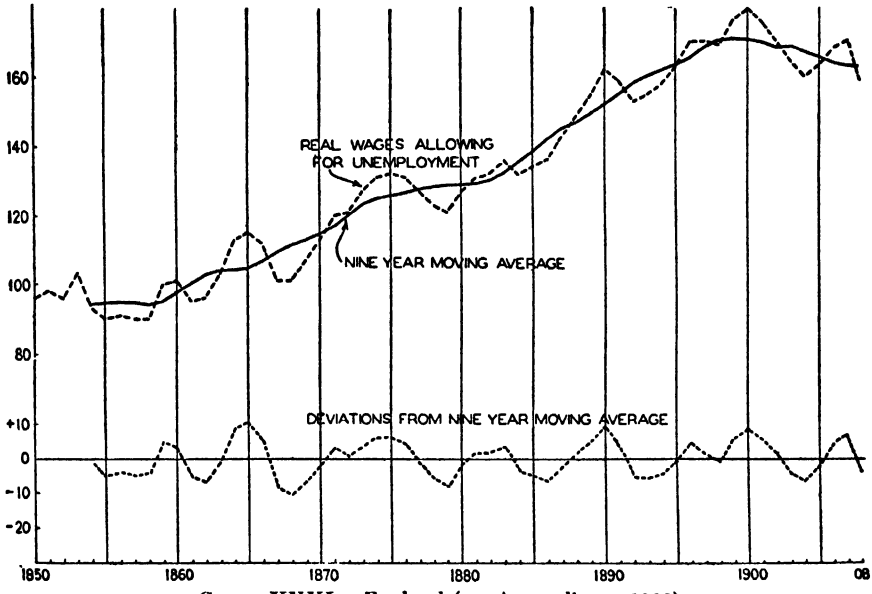


CHART XXXI.—England (see Appendix, p. 1062).

fall in wage bill. The years 1868 and 1892 do not call for comment. We also readily understand that a fall may occur in the course of a Kondratieff prosperity, as a result of a "crisis," provided it be as short-lived as it was after 1907. But there is a prolonged fall in the English figures for 1901 to 1904, which is contrary to expectation and to which nothing corresponds in this country except a small setback in 1904. It is of course the same phenomenon that was noticed above, but with a new trait added. Most years of unusual increase are easily identified as years of Juglar prosperities, though there are some among them that belong to either revivals or recessions.

We do not expect, nor do we find, any significant lag in monetary wage bill behind comparable aggregates. On the upgrade it rather precedes, if anything, the index of wholesale prices. There are cases, such as the behavior of the British series in the nineties, that illustrate

almost ideally, and by so doing testify for, our view of the mechanism at work. In that particular case, wage bill recovers from 1893 while wholesale prices are still falling and breaks into a stronger rate of increase in the same year in which wholesale prices turn upward. In fact, as the reader will recall from our theoretical discussion, the factors that bring about recovery and the different factors that bring about prosperity may indeed make themselves felt at an earlier date in some of those elements of the system that move in response to speculative anticipation, but their *mechanical* effect must show early and unmistakably in the wage bill.

4. If there were no unemployment in the neighborhood of equilibrium from which a cycle starts, and if population were constant, the same would be true of money wage rates. Since these conditions are not fulfilled, we shall expect a lag in rates on the upswing, which measures the amount of preexisting unemployment. We find it. In 1868 wage bill increases while rates remain constant. In 1880 wage bill goes up while rates fall in that and even the following year. The year 1887 presents a similar picture. But we find, although annual figures are inadequate for the purpose, rather less of lag than we might expect.[1] The English series covers six Juglar prosperities, of which four set in toward the end of the year, so that an annual average may well produce a spurious lag, as well as veil a real one. In the other two cases no lag is observable, and no lag greater than a few months can have been present. The effect shows rather in that wage bill rises, in the beginning of an upswing, more strongly than wage rates and that later on these rise oftener than wage bill at an increasing rate. It is worth mentioning that that lag, such as it is, which has been so often emphasized and even overstated, does not present any new problem for us and does not require introduction of any cause extraneous to our mechanism. But it is still more worth noticing that the same holds true for the "lag" in wage rates on the downgrade, which is more pronounced. Both bill and rate increase in 1866, 1873, and 1883; rates stay up in 1884 when wage bill falls, and similarly in 1893 and 1900. Wage rate does not reflect 1907, although wage bill does; neither reflects the recession of 1913, in which year rates rise.

Now most economists are inclined to call upon such factors as stickiness in order to explain this. Without denying the validity of such explanations for many cases—although those factors cannot have had, at least up to the turn of the century, anything like the importance they were to acquire later on—we must still remember that, while there

[1] The lag is, however, clearer in some particular industries. Compare, for example, Hooker, Relation between Wages and Number Employed in the Coal Mining Industry, *Journal of the Royal Statistical Society*, 1894.

is strong reason to expect a fall in bills and rates during "deep" depression, there is much less reason for expecting that they should fall in recession. The opinion that wages should fall because, and to the same extent as, prices fall and that their failure to do so is necessarily an additional source of disturbance, is incorrect. If reality conformed to our model, as designed for the purposes of the First Approximation, the monetary wage bill would indeed have to return to its figure in the preceding neighborhood of equilibrium, and rates would consequently have to fall, unless vicarious unemployment is to ensue, at least proportionately, but more than that if the population seeking employment had meantime increased. The fruits of innovation and induced developments would entirely be harvested in the form of increased "purchasing power" of the unit of income. But since, as we have seen, autodeflation never does full work, and since as far as it does work, the requirements of the conquest of new economic space counteract its effects, there need not be a fall in bill or rates at all: we may find instead a continued, though weaker, increase. Which we are to expect in any particular case, is, for a normal recession and before depression casts its shadow, indicated by the behavior of the deposit figure. If this does not fall, wage bill and, barring increase in population, rates need not. If it increases, they can and will[1] also increase, without causing disturbance as they would if failure to fall were due to stickiness or increase were due to, say, an act of legislation. Wages, bills or rates, need not even necessarily fall during the depression phase, although they are much more likely to. They will not, of course, if the depression of a cycle coincides with a sufficiently strong prosperity or revival of another, but it is more important to note that they may stay up, even barring such coincidence, if panics and spirals do not play too great a role. In the only Kondratieff depression which we have before us, the English wage bill actually increased by about 25 per cent, and no explanation external to the mechanism of evolution is needed to account for this.

[1] This is, of course, not equivalent to saying that if the deposit figure be made to increase, by central bank action or by any other influence external to our process, wage bill will increase also. But we shall understand that so pronounced a covariation—see, for instance, the covariation of Pay Rolls with Net Outside Deposits minus investments in this country, Chart XXIII—should have invited causal interpretation. The fact, however, that covariation is particularly good if deposits are cleared of the influence of the item most completely under the control of banks—investments—clearly tells against it. Perhaps it is not useless to state once more in a perfectly general form the problem involved. We observe, let us say, any time-series material consisting of the time variables $x_1 \cdots x_n$. We find that one of them x_i stands in an invariant relation to another, x_j. It is submitted that in the absence of any knowledge about the relations subsisting between *all* the variables, $x_1 \cdots x_n$, we are not justified in inferring from such a finding that any arbitrary change in x_i will be accompanied by the change in x_j, which actually does accompany it within the system observed.

What autonomous monetary influences there were, worked the other way.

Chart XXIX presents evidence that, as far as it goes and as far as it can be trusted, justifies similar conclusions for America. Railroad Earnings and Failures (liabilities) have been inserted to provide links with the general business situation. The closeness of the covariation of the former, as well as of "dividends" (see Appendix) with wage bill, needs no emphasis: the dominating cyclical factor in wage bill is of course employment. Behavior of corrected wage rates is according to expectation, but the strong increase in corrected wage bill, 1895 to 1908, is not, and must be explained by peculiarities of the American environment, immigration among them.

5. A question, however, suggests itself: Has not the above analysis gratuitously assumed that the cyclical process leaves the relative marginal significance of labor in the productive process unchanged? For only in this case it follows—to return, for the sake of simplicity, to the pure model, also assuming population to be constant—that money wage bill and wage rate will be at the same figures in the new equilibrium, at which they were in the old. Since most innovations are not only labor-saving themselves[1] but induce adaptations that are also labor-saving, there seems to be no reason whatsoever to expect this; hence, the wage bill may decrease whatever happens to the total income. We therefore meet again the problem of machinery and labor—it is convenient to confine ourselves to this special case—which we have already met twice: in our discussion of unemployment and in our discussion on saving in an otherwise stationary process. But we meet it now in its fundamental aspect, for technological unemployment is but a special and, moreover, as we have seen, a temporary form of the effect of technological improvement on the wage bill. We meet it, also, in the new setting provided by the process of evolution. We cannot any longer reason on invariant production functions; nor can we any longer deal with the isolated effects of laborsaving innovations. We must take account of all the elements of our process and, in particular, of the emergence of new investment opportunities not due, as it was in the case of saving, to mere fall in the rates of interest. The usual arguments both for and against the necessity, likelihood, or possibility that total monetary wage bill will be increased or decreased by technological improvement, thus become as irrelevant as, within their proper sphere, they are inconclusive.

[1] On the concept of laborsaving devices, see Mr. Hicks' Theory of Wages, p. 121. Accepting his definition, we call an innovation laborsaving if it increases marginal product of "capital" more than that of labor. It need not actually diminish the latter, and corrected wage bill need not fall absolutely.

But all the more conclusive are the facts. Although the wage bill and the share of total income it represents fluctuate in the course of cycles (even if we exclude from total income, as we should, gains and losses from the sale of capital assets, in particular from speculation in land and securities), its long-run relation to total income and to most other monetary aggregates seems substantially stable (see Charts XXVII and XXIII). We may infer that an absolute amount of wage bill would, as between neighborhoods of equilibrium, be constant, if deposits, clearings, and total income were. This of course implies invariance in the long run, of the money wage bill, both to innovation as such and to the relative increase, within total output, of equipment goods it induced. Now our data are not too good to make it impossible to attack the fact. If, however, we accept the evidence, such as it is, then the next possibility is to say simply that it is very remarkable that a relation which theoretically could fluctuate anyhow yet remains constant, but that it is so. And this the reader had better do, unless he accept the principle of the author's theory of interest, which would offer a theoretical explanation: if it be true that in an ideally perfect competitive equilibrium no assemblage of physical goods yields any net return, then it follows that there must be, on the system's way toward such a state, even if it be never reached, a tendency of all incomes, except payments for the services of labor and natural agents, to vanish. The "wage and rent bill" would tend to absorb, with a lag, the whole of national income, and any failure of wage bill to keep, in successive neighborhoods of equilibrium, a constant proportion to it could only be due, either to change in the relation of marginal productivity of labor to that of natural agents, or to varying degrees of imperfection in the neighborhoods for which the figures of wage bill are being compared, neither of which would in general be of an importance sufficiently great to dominate the findings.[1] Without appeal to this theory, it is still possible to argue that, "real capital" being itself a product, its price will tend to be a minimum whenever the system is approaching equilibrium. But if that minimum contains an element of interest, no general proposition is possible about absolute or relative shares in the national income, although it remains true that no such minimum principle operates in the case of wages.

[1] Professor Leontief objected to the above argument on the ground that, since the author does not hold that interest or return to real capital—net marginal value productivity—is actually zero in the neighborhoods that we observe in real life, the result does not follow, even if his theory be accepted. This is not so, however. If interest fails to become zero because it represents a payment that is a necessary element of the productive process, a payment for a distinct productive service for instance, then it becomes an open question what happens to the relative importance of that service. If interest fails to become zero for other, for instance frictional, reasons, then there is no room for such an argument.

The fact, whether explained or a mystery, that wage bill behaves as if it were a total monetary aggregate, such as the sum of household incomes, while we know it to be but a variable part of it, together with what has previously been said about price levels, suffices to account for the cyclical behavior of real and corrected wage bill and, with the obvious qualifications, of real and corrected wage rates. In particular, we saw how these quantities fared in recession and depression. That behavior bears witness to the old proposition so familiar to the common man, that the working class is, as a whole and on the whole, better off in times of falling than of rising prices. This needs to be qualified, first, for the fall of prices in "deep" depressions; second, for the rise of prices, if any, in revivals, and third, for the rise of prices in the upswing of shorter cycles that lie in the downgrade of the longer ones. Nevertheless, it expresses a broad truth. To be sure, this truth is usually made to rest on mere stickiness and the simple arithmetical effect of falling prices on a given income. This is sufficient only for other than the cyclical cases—cases of gold or government inflation, for instance—which are historically associated with misery. But our argument shows that there is some foundation for it also with reference to cyclical variations in price level. As in similar cases, the true contours can be expected to reveal themselves most clearly in the Kondratieff. So they do. Information is available for England, that would not warrant positive assertion, yet suggests that this holds beyond the span covered by our series. Real wage bill, as well as rates, very probably rose somewhat from 1775 to 1815, that is to say, in the later stages of a Kondratieff revival, the whole of a Kondratieff prosperity, and in a little more than a Kondratieff recession that was distorted by government inflation and hence cannot be accepted as normal. Thereafter there was, until the forties, little change in incomes, while cost of living fell so considerably that it is not likely that better information about unemployment would invalidate the inference that real wage bill, as well as rates, rose much more than they had risen before. In the forties real rates cannot have increased considerably. During the period of rising prices that followed, completing the Kondratieff upgrade, but outlasting it for reasons we know, corrected rates certainly, and real rates possibly, fell (see Chart XXVIII) until the top of the grade was reached—though, because of increased employment, the real wage bill almost certainly rose—and then, from the top (1856) to 1897, took the stride—nearly 80 per cent—which created the modern standard of life. There was hardly any increase in real rates in the period 1898 to 1913 taken as a whole, though of course there was in real wage bill. Normally, and with but a moderate number of exceptions, real bill and rates increase in season and out of season. But it is the increase in the three last phases of each of our two Kondratieffs

that is mainly responsible for the observed trend in real rates. Since this trend is the effect, however distorted by external factors, of the working of our mechanism, it may also be identified as a result trend.

From the above analysis it may be inferred that the sequence of cyclical situations tends to produce wage rates and wage bills which are, with due qualifications as to the many cases of indeterminateness that arise, adapted to them in the sense that they do not in turn require or induce a distinct process of adaptation on the part of other elements of the system. In particular, it follows that occurrence of the upper turning point or of depression is not normally such an adaptation to preceding wage rates, enforced, for example, by any failure of the "purchasing power" of laborers to develop in a manner that would enable them to buy the increment of product resulting from every step in the evolutionary process. Nor is it true that money wage rates or bills would have first to rise, or to be increased by public authority or by the pressure of organized labor before the system can move up from the lower turning point. On the other hand, we have also seen that the mere fact of wages rising in prosperity to the extent appropriate to the upward shift of "demand curves for labor" is not the "cause" that turns prosperity into recession, and that the failure of money wage rates to fall during the latter phase has normally as little, if anything, to do with pushing the system into depression as such fall as occurs in depression has to do with helping the business organism on to the path of recovery.

These statements, however, do not imply anything about the effects of those levels and variations of money wage rates that are not, as we have put it, produced by the working of our process but are imposed on the system. Such imposed rates may—although they need not; there are plenty of reasons why, in a given instance, the system should fail to give effect to its tendency to produce the adapted rate—spell disturbance, *i.e.*, enforce additional adaptations of other elements of the system. But even if they do, this in itself only means that they disturb a process which by virtue of its very nature creates, although it also eliminates, disequilibria. Interference with such a process need not intensify these disequilibria but, on the contrary, may mitigate them. We have not even, by denying that the cyclical behavior of wages, such as our process tends to produce, is causal to the occurrence of recessions, depressions, and revivals, completely prejudged the question whether the first two could not be toned down and the third facilitated by the imposition of appropriate "inadapted" wage rates. No particular dignity is claimed for the adapted rates. Our analysis refutes, indeed, some of the arguments that are commonly adduced in favor of high or low wage policies. But it does not preclude others. Satisfactory treatment of this problem

requires, however, the whole apparatus of general theory and cannot be attempted here. And only a few aspects of it will be presented in our discussion of the postwar epoch.

D. Deposits and Loans.—Returning to the argument of Sec. B, we will now discuss the behavior of the sources of system expenditure, *i.e.*, of (the cash and) the balances or "deposits" of firms and households, and thereby also gather up the threads of the analysis of Chap. III, Sec. D, as developed in Chap. IV. Perhaps it is not superfluous, speaking of "sources" of expenditure, to advert to the metaphorical character of that phrase and to the misleading associations to which it may give rise. We are not now moving toward the origin of the cyclical process but, on the contrary, away from it. It is precisely in order to avoid any implications about mechanical effects being exerted on the pulse of business by the "flow of funds" that the subject of balances has not been taken up before the subject of the expenditure they finance. For the same reason, discussion of the behavior of banks and of the role of central banks will be deferred to a still later stage. In this section we are going to look at financing from the standpoint of firms and households only.

1. Any act of expenditure may be financed:

a. By Previous Receipts. The reader will recall the proposition that in a process which merely reproduces itself at constant rates (stationary process) all acts of expenditure could and would be so financed. Now the bulk of a nation's business, at any given point of time, consists of transactions that repeat with adaptive variations the transactions of previous periods of account. For some purposes it is convenient to split each of these transactions into an exact repetition and a plus or minus variation, and to look upon all these exact repetitions, on the one hand, and upon all the corresponding variations, on the other hand, as separate classes of transactions to be distinguished from a third class, which consists of new transactions—mainly, those effected by entrepreneurs or induced by entrepreneurial activity. At the level of abstraction appropriate to our pure model we applied that proposition to the first class of transactions, the repetitions. But we cannot do so any longer. We have, indeed, to recognize the fact, much more frequently observable in Continental Europe than in England or the United States, that many old firms actually run their business on "owned" cash or "owned" deposits; but this is now, even for exact repetitions, merely the limiting and not the general case: most firms, old as well as new, currently borrow and repay, even within the most ordinary business routine.

This practice is, as we have seen (Chap. III), a by-product of the process of evolution through which borrowing and credit creation intrudes into the old strata of the economic system, partly because balances created for the purpose of financing innovation are hardly ever completely

eliminated by autodeflation, partly because other balances are created for the purpose of financing the expansion of the noninnovating sectors which comes about in response to the impulse given by innovation. What we have called the Conquest of New Economic Space thus expands permanently, though not in proportion to physical output, the monetary system and at the same time creates that gap between producers' expenditure and receipts which it then becomes the most "regular" business of banks to bridge. A little reflection will show that this gap, which is so familiar a phenomenon as to seem hardly to stand in need of explanation, is in fact entirely due to "progress" and would not, except as a result of previous waves of progress, be present in a stationary society. But, although not extraneous to our model, the fact that, in a society the monetary process of which has become adapted to evolution, repetitions may require financing as much as plus-variations or new transactions affects our expectation as to the behavior of balances. So far as repetitions are actually financed by owned cash or original deposits, this cash or these deposits do not, in consequence of a decision to restrict operations, disappear but simply become idle. But so far as they are financed by borrowing, the corresponding balances do not become idle but disappear in that case through repayment or else fail to emerge altogether. The businessman's decision and its economic results are the same, whether it is "quantity" or "velocity" of deposits that is affected, but the statistical picture is different.

While, however, we have to recognize that mere repetitions also present a distinct problem of financing, the problem of financing new transactions may frequently be solved by previous receipts being deflected from the channel into which they have previously been directed. A man, who has been in the habit of setting aside a yearly sum in order to buy a new motorcar every five years, may at the end of one of these five-year periods decide to buy an aeroplane instead. Not only system but also consumers' expenditure or, had we chosen an example from the sphere of production, producers' expenditure remains unaffected in case of such Deflection.

b. By Overspending. This term is to mean allowing one's balance to fall below the amount appropriate to the requirements in the previous neighborhood of equilibrium. This will affect system expenditure but not total balances. The opposite case, Underspending or, as we have previously called it, Nonspending, occurs if cash balances rise above that amount and is usually referred to as "Hoarding." This word, however, lends a wrong color to an extremely simple state of things and should never be used except in order to designate the thing it really means—still observable in India, for instance—which, sociologically and economically, is perfectly definite and presupposes a characteristic

attitude toward money entirely foreign[1] to capitalist society. We also recall that it is misleading, although for other reasons, to express the fact of underspending by reference to any demand for balances, which is in this case purely fictitious, or to call it saving. Release from underspending is, of course, an important method of financing the expansion of recovery. It should be observed that, although, given the sum total of cash items of households and firms, all of them cannot increase or decrease at the same time, *yet the inactive part of them can.*

c. By Selling Assets. If an asset be sold to a bank (to this we refer as "member bank investment"), customers' balances will be increased unless the bank neutralizes the effect. And if it be done in order to finance an act of expenditure, it will of course lead to an increase in system expenditure, although it would not by itself and in the absence of such intention have that effect. The answer to the question by how much it will increase it depends on the behavior of those firms and households that are the recipients of the sum thus procured—hence on the cyclical phases into which that event happens to fall. If an asset be sold to another firm or household, it will not increase the sum of balances but may still increase system expenditure if it is the occasion of turning an inactive deposit into an active one. If a bank sells to firms or households, the balances of the public are decreased.

d. By "Temporary Investment." This is the term given in Chap. III, Sec. A, to signify using, or borrowing from another firm or household, a sum which is and remains intended for another act of expenditure lying sufficiently far off to make it possible to replace or repay that sum before it will be wanted. We assume in sufficient approximation to fact that Temporary Investment acts exclusively through the open market or the stock exchange. It increases system expenditure but not the total of balances.

e. By Issuing Promises to Pay. These may be issued, for example, in the form of bills of exchange, provided they are actually accepted in payment and circulate (see Chap. III, Sec. D, 3). This item we shall neglect, however.

f. By mining or importing the monetary metal and having it coined, or exchanging it for a deposit, or, what economically comes to the same thing (as has been pointed out by Wicksell), forging money. This increases deposits and the bank's cash by the same amount. If not deposited, the money may only increase the outside circulation.

g. By Borrowing from a Bank. This, in England and the United States, increases deposits immediately (with a qualification as to over-

[1] The only cases in capitalist society at all akin to true hoarding are those in which lawful money is held from a distrust of banks, or some kind of lawful money from distrust of other kinds, or some commodity from distrust of all kinds. But these phenomena are in a class by themselves and entirely different from nonspending.

drafts), and in Germany as soon as payments to firms or households are effected.

h. By using one's own, or borrowing some other household's or firm's uninvested savings or accumulations. By *borrowing* we also mean to include methods which do not technically come within that term, such as the formation of partnerships.

i. By Taxation and the Issue of Government Fiat. As a method of financing business these items will now be neglected, although we have repeatedly met them in this role in the historical chapters.

j. By Buying on Credit. But we will in general assume, although this is often far from the truth, that in this case sellers borrow from banks equivalent amounts. The same applies to the opposite case, in which the burden of financing production is shifted by payment being exacted in advance of delivery.

k. By Borrowing from Abroad. This acts exactly like *f* if it leads to imports of gold, and in exactly the opposite way if the proceeds of the loan buy foreign commodities.

2. Since all these methods of financing combine to shape the behavior of balances in the phases of the cyclical process, and since there are so many external factors that are bound to assert themselves, it becomes doubtful whether the contours to be expected from our model will show at all in the series of deposits and of bank loans. These expectations need not be restated. Firms' and household's (cash plus) balances are primary and consequential and make a natural, systematic, and cyclical series, which should behave like system expenditure and display a result trend in the same sense. The same holds for member banks' loans and discounts. Modifications are necessary even in the case of the pure model and will be noticed presently. But it is interesting to see how far reality conforms to what seems to be a theoretical construction very remote from actual fact. Chart XXV supplies the answer. The covariation of deposits, loans, clearings, and of all three of them with pig-iron consumption and the production of equipment, though far from perfect, is striking. The reader is invited to satisfy himself that it could hardly be expected to be stronger, the material being what it is, if there were no factors or mechanisms at work other than those embodied in our model. Our problem is not so much how to explain deviations from that expectation as how to explain a conformity so much beyond reasonable hope.

For both these purposes it is necessary to bear in mind the shortcomings of our material, which make it impossible to place much confidence in anything except the roughest contour lines. Our analysis is based mainly on American data, neither English nor German statistics being at all adequate for our purpose, although they may be used as

supporting evidence and although more valuable information is available for Germany since 1901.[1] Those American data refer to national banks[2] and thus represent a sample of varying importance, which cannot be trusted to reflect the condition of all commercial banks.[3] The series of individual deposits less clearing-house exchanges, which is the one that has been primarily used, substantially gives the balances of firms and households that we want, since it excludes government and interbank deposits—although deposits due to savings banks were included by some national banks until Apr. 26, 1900—but the device of using individual deposits of national banks outside New York in order to reduce the influence of speculative and other transactions which we wish to exclude is of course as unsatisfactory in this case as it was in the case of clearings. The fact that short fluctuations in deposits and in loans and discounts outside New York City are inversely related to those in New York deposits and loans and discounts tends, however, not only to reassure us on that point, but also to show that the bankers' bank functions, which we attribute to the national banks of New York, was not completely overshadowed by their commercial and industrial business. In comparing this series of outside deposits with our clearing series, which represents a different sample, we are, of course, opening up another source of error.

[1] See Professor A. Hahn's analysis in *Vierteljahrshefte zur Konjunkturforschung*, 1927. German bookkeeping methods and German terminology increase the difficulty of interpreting German banking statistics, which for the nineteenth century are also unsatisfactory for other reasons. What the writer believes to be acceptable indicators of the behavior of balances plus hand-to-hand circulation are, however, plotted on the pulse charts.

[2] National bank data have been analyzed by many students. There is however one outstanding contribution, to which the writer wishes to acknowledge obligation and to refer the reader for many points, regional differences among them, that cannot be dealt with in the text: A. A. Young, An Analysis of Bank Statistics for the United States, reprint of articles from the *Review of Economic Statistics*, 1928, especially pp. 1–7, 21–32. Also see J. P. Norton, Studies in the New York Money Market, 1907, and O. M. Sprague, Crises under the National Banking System. There are, of course, figures for other banks, both since and anterior to the establishment of the National Banking System. Some of the older material has been generously put at the writer's disposal by Professor Cole. Reference should be made, also, to W. B. Smith and A. H. Cole, *op. cit.* Estimates of total, time, and demand deposits, 1834–1935, have been made by Dr. C. E. Thomas; they will be presented in the writer's book on money. For the purpose in hand it has seemed best to keep to comparatively safe ground. No indications have been encountered to warrant a suspicion that results are affected thereby.

[3] The growing importance of trust companies in the nineties and particularly after 1899, which, with the rise of the Kondratieff, "began to invade, on an extensive scale, the field of deposit banking" (A. D. Noyes, Forty Years of American Finance, 1909, p. 367) and increased their deposits from $198,000,000 in 1898 to $834,000,000 in 1906 (*ibid.*, p. 368), constitutes a further and very serious limitation of the symptomatic value of national bank figures.

Moreover, for our purpose we ought to include overdrafts with deposits, because from the standpoint of the individual firm or household they are no less available "funds" than deposits. They fluctuated, however, as deposits,[1] only much more strongly, and hence but accentuate the phenomena under discussion. But they are included in loans and discounts prior to Dec. 1, 1898. Collateral loans can be separated from others since 1892. This has not been done, because, as mentioned in the first chapter, they may and often do serve purposes other than stock exchange speculation. Concerning time deposits, reasons will be offered later in this section and in our discussion of postwar developments for believing that our inability to separate them from demand deposits[2] is less unfortunate than one would think. For the period at present under discussion time deposits in national (and all commercial) banks were not very important until 1896. After that date they rose rapidly, and, although in 1915 they stood at a level which was low when compared with the figures to which they were to soar in the postwar period, they cannot be considered as negligible. As a matter of banking practice, however, it seems plausible that during the prosperity of the late nineties, which they had to face in fetters that were comparatively tight, national banks adopted a policy of attracting along with genuine savings also nonsaving accounts by offering to treat them like saving deposits. If that was so, we probably lose little by using total deposit figures, without attempting to correct them for time deposits.

Since, finally, cash in hand and balance with a bank are, normally and for the individual firm or household, but different forms of the same thing, the really significant item is cash plus balances rather than balances alone. Substantially, however, we must, at least for prewar times, content ourselves with the latter. The only indication we have about cash in hand is from Money in Circulation, which, besides lacking comparability with national bank deposits outside New York City, must be estimated in extremely hazardous ways. We have a continuous but highly unreliable series of money in the country outside the Treasury (specie, bank notes, treasury notes, and so on) from 1813 to date,[3]

[1] *Cf.* L. W. Hall, Cycles in Banking, p. 74.

[2] That inability is not absolute. Professor Mitchell (Business Cycles, 1913, p. 321) has presented an estimate of time deposits back to 1890. Dr. Thomas's estimate comprises deposits evidenced by savings passbooks, time certificates of deposits, and postal savings deposits back to 1834, and thus implies, to be sure, a definition of time deposits that differs from the usual and official one. But for 1931 these three categories represented about 90 per cent of the total time deposits reported by the Comptroller. And they probably overstate rather than understate that amount, which really differed in nature from demand deposits. For early data relating to Mutual Savings Banks see E. W Keyes, A History of Mutual Savings Banks in the United States, 1876.

[3] *Cf.* A. Barton Hepburn, History of Currency in the United States, 1915, for early

from which the series of money in circulation[1] has to be derived by subtracting money in banks. For the period from 1834 to 1863 the Comptroller of the Currency recorded both items. After 1900, when about 90 per cent of the state banks and trust companies, though only from 20 to 25 per cent of private banks, reported either to state authorities or directly to the Comptroller, we have figures which cannot be far from the truth and are amenable to fairly convincing corrections. But before 1834 and during the troubled period from 1864 to 1875 estimation becomes, to say the least, very risky. For 1875 to 1900 an intermediate situation prevails. The series of money held by reporting banks is more significant after than before 1875. But for an estimate of money held by nonreporting banks we are lacking the indication given since 1900 by the Treasury's estimate of deposits in all banks. There are various estimates, among which Professor Mitchell's—from the average deposits of reporting private banks, 1890 to 1911—seems to hold first place. We might also extrapolate backward the ratio between deposits in all and in reporting banks for 1900 to 1914 and apply the result to that section of the series of money in reporting banks. In any case, however, it is a matter of estimating from estimates by means of assumptions, some of which are obviously contrary to fact.

3. If, in order to start from a reasonably simple model, we now focus attention on items *a*, *b*, *c*, *g*, and *h* of our list, we have first to qualify our expectation as to perfect parallelism between the variations of outside clearings and outside individual deposits by taking account of the phenomena noticed under *a* and *b*. In fact, if there are in the system any deposits at all which do not emerge through loans and, hence, do not disappear through repayment,[2] expectation as to volume of deposits must, even for the pure model, be supplemented by an expectation as to

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data, which can be supplemented by the annual reports published by the Comptroller of the Currency; see, in particular, those of 1900, 1904, 1920, and 1931. The quality of the series differs, of course, as between different periods. But it never reaches reliability, the components of its items, except annual coinage, being rough estimates. For the correction made in 1907 see *Annual Report of the Director of the Mint*, 1907.

[1] See estimates by Professors Kemmerer, 1897–1904; Irving Fisher, 1896–1909; Wesley C. Mitchell, 1890–1911; W. I. King, 1880–1920; A. A. Young, 1901–1914. For all these, as well as for another estimate, 1900–1926, *cf.* Y. S. Leong, An Estimate of the Amount of Money Held by the Banks and of the Amount of Money in General Circulation, *Journal of Political Economy*, 1927. The writer acknowledges the help derived from a report by Dr. C. E. Thomas, who made the attempt to estimate money in circulation for 1813 to 1933. For our purpose it was not thought necessary to reproduce the chart.

[2] Balances that arise from loans need not always be repaid when they are no longer wanted. And balances which result from customers' selling assets to banks may, although "owned," disappear in that case, because their owners may prefer to buy assets instead of keeping them idle. The statement in the text assumes that the possibilities of borrowed deposits becoming idle and of owned deposits being eliminated are of minor importance for the argument in hand.

the rate of spending. Obviously, there will be Overspending in prosperity, return to normal amounts of (cash plus) balances in recession, Underspending in depression, and again return to normal habits in recovery. Clearings should therefore rise more in prosperity and fall more in depression than balances do. Any increase in recession should be more marked, the increase in recovery less marked, in the deposit than in the clearing series. As far as our Chart (XXV) can be trusted at all, its testimony may on the whole, due attention being paid to interference of cycles with each other, be invoked in support. It would be hazardous to go further and to interpret what at first sight gives the impression of a long-time tendency of the curves to draw apart, in the light of cyclical effects only. Too many other elements enter into it. It is, however, permissible to point out that, as far as that impression is due to the behavior of the curves in the last years of our period, it is in fact accounted for, in part at least, first by a Juglar and then by the beginning of a Kondratieff recession.

We might discard the problems incident to the growing divergence of clearings and deposits by eliminating the "trends" in both series—two straight-line trends fitted to each of them for the intervals which belong to the two Kondratieffs would serve the purpose—and then derive a strongly cyclical series of deviations of clearings divided by deviations of deposits, which, although open to criticism on the score of the imperfect comparability of the components, as well as to other objections, could be said to indicate roughly the variations of the rate of spending in the shorter cycles. It might serve to interpret certain properties of the relation between deposits and price level (see the Pulse Charts V, VI, VII). Recalling the results we finally arrived at about the cyclical behavior of output, we should, irrespective of overspending and speculative anticipation, expect the price level to rise somewhat less than deposits in prosperity. Because of overspending it should, irrespective of such increase of output as actually occurs, rise somewhat more. There is no reason to believe that these two effects will exactly balance so as to make price level vary in proportion to the variation of deposits; but they will balance to some extent. In deep depression again, underspending, intensifying the effects of decrease of deposits, is partly at least counteracted by decrease in output. The rates of spending and of output also vary in the same sense in revival, and only in recession do they fail to move together. Since, however, the latter effect is partly suppressed by trend elimination and, in any case, weak within the shortest cycles, we shall not share Professor Pigou's astonishment[1] at Mr. Carl Snyder's finding that "deposit velocity" and "trade activity" display a tendency to

[1] "Industrial Fluctuations," Chap. XV. On his analysis of English figures see Edie and Weaver, Velocity of Bank Deposits in England, Journal of Political Economy 1930, p. 398. Mr. Keynes discussed Mr. Snyder's finding in Treatise on Money, pp. 80–82.

neutralize each other's short-time effects on the price level, although we may be unable to follow Mr. Snyder when he concludes that "neither variations in velocity nor in trade activity are normally a factor in the determination of the price level"[1]: for "trade activity" is obviously not unconnected with the variations in deposits, which, according to Mr. Snyder, are—along with the "long-time trend of trade-growth"—the only factors to act on the price level. The picture presented by English figures (Chart XXXV, Chap. XIII) is not substantially different. The material of other countries does not lend itself to a similar experiment, but indications may be had. In France, for instance, the "velocity" of the net (*solde*) of the current accounts in the Banque de France, first studied by P. Des Essars (*Journal de la Société de Statistique de Paris*, April 1895), gives us such an indication, which conforms to expectation.[2]

[1] *Cf.* Carl Snyder, The Problem of Monetary and Economic Stability, *Quarterly Journal of Economics*, February 1935, p. 189. Chart IV, p. 188, may be referred to as illustrating the phenomenon under discussion. But it must be born in mind that it cannot do more than give a very rough idea of it. Outside clearings divided by Mr. Snyder's index of the general level of prices, corrected for trend and seasonal fluctuations, stand up to 1919 for output. And total clearings divided by national bank deposits are taken to represent "velocity" or, as we would say, rate of spending. Neither ratio represents satisfactorily what it should. The method used to construct the output series, from 1919 on, is not open to the same objections. But the behavior of the other series, during the years from 1926 to 1930, sufficiently shows that it cannot reflect adequately the rate of spending in the spheres of consumption and production. Reference should be made to Mr. Snyder's other papers on the subject, in particular, A New Index of Business Activity, *Journal of the American Statistical Association*, March 1924; Deposits Activity as a Measure of Business Activity, *Review of Economic Statistics*, October 1924; New Measures of the Relations of Credit and Trade, Academy of Political Science, *Proceedings*, January 1930, to which is appended a bibliographical note. In spite of all that we may have to urge against both the statistical finding and Mr. Snyder's interpretation of it, the facts remain that the covariation in the sense outlined in the text between output and "velocity" is definitely recognizable, and that our analysis goes some way toward supporting the results of his. The affinity becomes still clearer from his argument on p. 27 of the last-named paper, which explains the long-run rate of increase in output in terms of what we call growth and evolution without, however, connecting the latter with cyclical fluctuations. It is interesting to compare Mr. Snyder's investigation with Mr. Holbrook Working's study on the relation between fluctuations in deposits and in the price level (Bank Deposits as a Forecaster of the General Level of Wholesale Prices, *Review of Economic Statistics*, 1925). Mr. Working finds fairly close covariation (somewhat improved by lagging) between the latter and the deviations of deposits from a trend of growth, which may be roughly identified with the trend in output. He does not stress the cyclical variability of "velocity." But since output as a matter of fact fluctuates cyclically, his result, such as it is, implies that. See, also, Mr. Snyder's charts on pp. 28 and 30 in New Measures of the Relations of Credit and Trade.

[2] See G. Roulleau, Vitesse de Circulation des Diverses Formes du Stock Monétaire, *Journal de la Société de Statistique de Paris*, April 1937, chart on p. 9. In order to appraise the significance of these figures, it is necessary to keep in mind the peculiar position of the Banque de France in the French economy.

4. Underspending is particularly in evidence in those rare cases in which deposits decrease absolutely: system expenditure as indicated by outside clearings then decreases still more (observe the declines to 1885, to 1894, and to 1908; if deposits, see American pulse chart (VI), increased in 1874 and 1875, this was presumably due to the fact that the national banking system gained ground and to the immigration of currency into banks). Such "hoarding" is wholly consequential and, as has been pointed out above (1, *a*), fundamentally the same phenomenon as shrinkage: if business were entirely financed by bank loans and if there were no other deposits than those created by these loans, there would be no underspending,[1] but all its consequences would still be present because of the additional shrinkage which then would take the place of underspending. It does not follow that measures directed against it are meaningless. Both underspending and nonborrowing are though consequential yet sufficiently important in themselves and as "causes of secondary effects" to warrant operating on them directly. Barring questions of technique, the problem is the same in both cases. Buy-now campaigns, public works, even stamped money, and so on may help to break spirals and to relieve depressive situations. Such treatment is, to be sure, merely dermatological. It also may have, and in general has, other effects besides the one desired. But it is not futile.

This, however, has little to do with Saving. Inasmuch as the latter presupposes the existence of owned balances (including cash) which do not, except in the case of bankruptcy, disappear when not in use, it will indeed tend to accentuate underspending as against shrinkage of deposits. Since it is immaterial which happens, there is no point in trying to stimulate expenditure by penalizing Saving except this: as far as saving is—though not necessarily—associated with real investment and real investment with postponable expenditure on durable producers' goods, savings are, in fact, more likely to become idle than the sums earmarked for expenditure on *transient* consumers' goods of the "necessary" type. This consideration does not, of course, suffice to "justify" a long-run policy that aims at transforming the former into the latter, which, if embarked upon a century ago, would have made it practically impossible to attain the present standard of life of the masses and which would logically also have to be applied to sums intended for expenditure on durable consumers' goods. Moreover, recalling our analysis in Chap. III, Sec. A, and our discussion of individual crises and depressions in

[1] To be exact, we ought to say that there will be less of it; for some decrease in activity will occur also with borrowed deposits. Moreover, there is such a thing as borrowing in order to be liquid. But its importance can hardly be great, and it is much more likely to occur in prosperity—when opportunities may be expected to present themselves suddenly—than in depression, when paying off bank debts or not renewing loans is the most orthodox thing to do.

Chaps. VI and VII, we conclude that depressions may be expected to be the milder, the more, other things being equal, the expenditure of preceding prosperities has been financed by saving and accumulation. But again, as a temporary expedient to be applied when depression has already set in, such an antisaving attitude, though still more productive of undesired consequences than simple stimulation of spending, cannot be called futile.[1]

Of course, it would change but the form and not the substance of our argument if we defined saving and accumulation so as to include, or to coincide with, nonspending. Tautological propositions that would then follow about the effects of saving in this sense cannot teach anything about the effects of thrift. That argument does not, however, dispose of the question what these effects actually are. One point has to be added, which turns on the relation between saving and credit creation: although in a system that is beyond the stage of what we have called the immigration of money into banks, "savings do not create deposits," they annihilate deposits whenever they are applied to the repayment of bank loans. This is in fact one of the major pieces of our mechanism—repayments out of profits induce autodeflation, or, to put it differently, accumulating profits *ex post* finance the real investment, which it was necessary to effect in order to reap them. If, in addition to this, the savings of households are borrowed for the same purpose, the process is, of course, accelerated thereby. Savings thus step in to relieve bank credit, and in this sense the old theory that it is savings that finance the expansion of the industrial apparatus comes partly true after all, even in the presence of credit creation. But they do so with a lag, which is responsible for a sequence of phenomena that would be absent[2] if, instead of stepping in at a later stage, savings financed enterprise from the start, and that would be less in evidence if they did not step in at all. We are obviously dealing with a very typical practice. Nothing is more usual, both in the case of enterprise in our sense and in the case of induced expansion, than to go ahead on bank credit and then to "fund" the debt by the issue of stocks and bonds. It is in this role, rather than in the role of primary source of means, that we would have introduced saving into our pure model, had we introduced it at all.

This deflationary effect of—not saving and accumulation as such but—the application of savings and accumulations to the repayment of bank loans is what can be adduced in support of oversaving theories and

[1] What contradiction may possibly be suspected to exist between the last two sentences of this paragraph will presently disappear.

[2] By this, it will be recalled, we do not mean the cycle itself but certain features which, though secondary in logic, yet are of prime importance practically, for instance, fluctuations of the price level which superimpose themselves on and accentuate the fundamental ones.

antisaving policies. Neither the effects of the saving and investment process within the monetary or the commodity sphere, nor such cyclical variability as may with justice be attributed to it—the "cyclical release of saving"—can offer any substantial standing ground for them. But it may indeed be urged that, as far as savings destroy deposits *which would not become idle*, they in fact intensify recession and depression. The losses incident to these processes will then be greater than they would be if the same sums had been spent on consumers' goods. And it might even be held that, thus applied, savings do not serve any social purpose because, once the task which older theory assigned to them is fulfilled by credit creation, they seem to come in, as it were, for no other purpose than to create trouble additional to that which innovation would create in any case. Here we come nearer, therefore, to the standpoint of oversaving theories—although it is not any "excess" of saving that is responsible for this additional trouble—than the general drift of our argument may have led the reader to expect.

The case which can be made out on these lines is, however, much weaker[1] than it seems. For, although there is no way of determining exactly the quantitative importance of this particular use of household savings, the behavior of our series shows that it can hardly ever have been responsible for absolute fall in deposits or in the sum total of incomes; and only if it had been, would it have had really serious effects. This is due to the fact that, as a rule, especially during prosperity but also in recession, repayment from savers' funds merely serves to set free banks' facilities for lending, which are then promptly used by other borrowers; and therefore it seems to contribute but little to the coming about of the upper turning point, except in price level and interest rates. Moreover, a stabilizing effect of the practice must not be forgotten. On the one hand, firms which succeed in substituting bonds or shares to their debt at their banks thereby consolidate their position and thus restrict the extent of the danger zone. On the other hand, as far as this is done during prosperity, it tends to bridle excesses and thus to mitigate, rather than accentuate, reactions. It is different, of course, in recession and as regards the danger that recession slide off into a spiral, when well-timed and well-dosed government expenditure could no doubt do much to counteract what then easily turns into functionless catastrophe.

A complete theory of saving and accumulation could, so the writer believes, be constructed from the *disjecta membra* that the reader finds in almost every chapter of this book. But he frankly admits that its

[1] Since analysis is our only aim, there is no need to go into the question as to how far antisaving recommendations, given certain aims, say, of stabilization, may be said to follow from the above. Taking the practical question in all its bearing, the writer personally thinks that there is no case at all for them. But that is for the reader to decide according to his valuations and according to his confidence in agencies of control.

factual complement is far from satisfactory. This is primarily due to a lack of data, which, for prewar times at least, confronts any student of the subject, however he may arrange his terminology. As far as it is also due to the particular definition of saving and accumulation adopted for the purposes of this book, the obvious reply to possible objections is that there was no choice. Nothing would have been gained by the use of a concept that, while lending itself a little better to statistical evaluation, would be irrelevant to the analysis of the real processes at work: the insoluble problem of how to extricate the relevant elements would arise nevertheless. We are, for instance, somewhat better off with respect to real investment ("capital formation") and to investment in general, although even these figures cannot be trusted beyond what we know independently of them.[1] But we cannot improve our situation by

[1] This must be obvious to anyone who undertakes a critical study of what is still the standard performance for England and the greater part of the nineteenth century (especially 1865–1885; there is, however, a retrospect that notices the more important attempts back to Petty, Davenant, and King): R. Giffen's Growth of Capital, 1889. The estimates, particularly of what he calls accumulation and, within accumulation, "free saving" (*i.e.*, the saving that is invested through the stock exchange), are, even though reasonable, much too rough to be of use. Later on, we have interesting figures for particular years, *e.g.*, from the Census of Production, 1907, and also series for individual items. They did not seem to warrant an attempt at constructing a general series, which the writer hopes, however, will be materially facilitated by a forthcoming work by Mr. Cairncross. No estimate of yearly "capital formation" seems possible for Germany, but interesting samples may be culled from the behavior of companies, one of which will be mentioned later. To a certain extent, this can be done also for this country, but there is besides a source that is peculiar to it and has recently been exploited by Mr. Snyder. (See Capital Supply and National Well-being, *American Economic Review*, June 1936; also Die Bedeutung des Kapitalangebots für den Industrialisierungsprozess, *Weltwirtschaftliches Archiv*, September 1935.) It is the Census Bureau's data beginning with 1826 on capital invested in manufacturing—value of plant, cash, inventories, receivables, and so on. The writer has not been able to satisfy himself whether value of plant means original cost, replacement cost, or book value, and is also on other grounds disposed to believe that the bureau discontinued publication of this information not entirely without reason (see the remarks in the XIIth Census of Manufactures, Part I, p. xcvi). The relation of the "value of real capital" to domestic savings must, moreover, be expected to be a particularly distant one in the case of the United States. Yet he gratefully recognizes the merit of Mr. Snyder's bold step. The relation of the curve to that of National Income (see *op. cit.*, chart on p. 203) is certainly what a theorist would expect. The figures for 1889, 1899, and 1904, excluding working capital, have been ingeniously used by Professors Douglas and Cobb (*American Economic Review*, March 1928, Supplement, p. 139) as stepping stones for an interpolation—although they are not comparable, both because they do not each time include the same things and because the mergers greatly influenced valuations - by means of an index of the quantities and prices of the commodities chiefly entering into capital goods so as to yield yearly figures. Critical comments crowd upon us (for some of them, see Professor Slichter's remarks in the discussion of the paper), but results may yet be nearer to the true contours than one may feel justified in hoping. We shall meet the subject again, but until we reach the postwar period shall continue to use only those indicators which have already been used in the preceding sections.

defining saving so as to make it equal to or identical with investing; for this would simply mean begging the most interesting question that arises in this connection, because it is precisely the relation between those two distinct processes on which more light would be desirable. A similar objection estops us from accepting the amount of new security issues taken by the public as an indicator of saving, which, moreover, is vitiated by foreign buying and the fact that to a great and varying extent subscriptions are financed by bank loans.

Figures for corporate accumulation are for prewar times available only in samples, the value of which is reduced by the dependence of surplus on a largely arbitrary variable—depreciation—and by revaluation of assets.[1] Estimates of accumulations by farmers, craftsmen, and private firms in general, which are ploughed back into their own business, must be highly unreliable. The greatest disappointment, however, awaits those who still cling to the idea that at least deposits not subject to check are, *ipso facto*, savings. This is most nearly true of the deposits in mutual and stock savings banks in this country and of the *Sparkassen* in Germany. But even neglecting the fact that the Continental saving institution also serves as the bank of the small man and that, as far as it does, increase in its deposits indicates not saving but simply transition to another method of keeping cash, we must not forget that a great part of those funds is assembled for definite acts of expenditure—a

[1] More ambitious attempts would be possible, at least for Germany, if one could neglect those difficulties and a few others. A very interesting study made by the Institut für Konjunkturforschung (Anlagetaetigkeit und langfristige Finanzierung in der Industrie vor dem Kriege, *Vierteljahrshefte zur Konjunkturforschung*, 1929), which undertakes to overcome them, must, however, be mentioned. It deals with 20 industrial companies only (capital in 1913, 404 million marks), some of them quite young, for 1896 to 1913. Accumulation is put equal to the sums "reserved" (out of net profits), plus the sums actually written off, minus "technologically necessary" depreciation. This "necessary" depreciation is, of course, not above objection, nor is the method by which it was arrived at, if we may judge from the short sentence describing it; but results are hardly invalidated thereby. We learn that accumulation (innere Kapitalbildung) varied much as dividends did, though much more strongly; that in the average of the sample it varied cyclically between 0.6 and 4.8 per cent of the paid-up capital; that in the average of years (between 1900 and 1913) it was 2.5 per cent of the paid-up capital, which equates it to about 20 per cent of the total net surplus over cost, excluding necessary depreciation, *tantièmes*, social outlay (expenditure from net profits for the benefit of workmen), and sums carried forward (*i.e.*, of the total of disbursements to shareholders plus accumulation); that these companies on the average raised fresh long-term funds--by the issue of shares and bonds--to the yearly amount of 7.7 per cent of their paid-up capital (as it stood at the beginning of each year); and that more than all of these means was regularly invested in plant and equipment before the end of each prosperity: investing outran long-time financing, occasionally even in depressed years. It must be remembered that the concerns investigated were highly progressive and, as said before, in part relatively new ones. The sample is, hence, not representative. But it suffices to correct many a mistaken idea about the investment process.

holiday, marriage, a cottage, and so on, or less definitely for, say, illness or a rainy day. Again, the reader may think as he pleases about the appropriateness of the writer's terminology, which excludes from savings these sums intended to be spent. But if he includes them, he will have nevertheless to recognize the fact that the sum total of these "savings" is currently drawn upon for purposes of consumption by the "savers" themselves, which makes all the difference.[1] This applies still more to the time deposits in commercial banks, only a fraction of which can possibly be looked upon as genuine savings. The rest represents underspending, temporary investment, and, again, preparation for "bulky" acts of expenditure, while, as has been pointed out before, a part of the total does not differ in nature from demand deposits. Finally, the method of deriving households' savings by deducting expenditure on consumers' goods from income[2] minus taxes and charities, is not available for the prewar, scarcely even for the postwar, epoch. But even if it were, we should have to remember that the presence of acts of expenditure which recur in periods longer than the income period must seriously impair the significance of the results. In an investigation into the effects of saving on the economic process and, incidentally, into the validity of oversaving theories of the business cycle, it would obviously be absurd to include in savings elements of income earmarked for expenditure on durable goods, such as houses, furniture, and motorcars. Yet this absurdity is not only difficult to avoid, but its influence must be expected to increase with time, since in a progressive community those elements of income will, in general, gain in relative as well as absolute importance.

Certain facts are nevertheless quite clear. The most important of them is that the amount of saving in our sense—and, be it repeated, producing a larger amount by means of a wider definition would not alter the situations, since the additional elements then included would not have the same effects—must be much smaller than is commonly supposed. For with a possible exception on the score of hidden reserves of firms, all our criticisms of the data tend to reduce it. It is also clear— in fact, a matter of common experience—that the behavior of firms' accumulation

[1] Similar considerations also apply to part of the assets of building and loan associations and of life insurance companies, which reflect methods of providing for future expenditure that are *alternative* to saving.

[2] It will be remembered that income in our sense excludes capital gains. Since they emerge outside of the flow of system expenditure, there is for purposes of business-cycle study no justification for including them. This has, however, been done in the recent investigation of the Brookings Institution, and it is to this item that both the fantastically high estimate arrived at and the rate of increase of "saving" in the later twenties of this century are due. Spending on consumers' goods of such gains is, of course, dis-saving and is on a par with financing consumers' expenditure by borrowing. See Chap. XIV.

must be strongly cyclical. Dividends do not in general fluctuate as much as does net revenue. But since we exclude capital gains, the behavior of households' saving is more doubtful, because the opportunity to save afforded by an increase in real income may be counteracted by optimistic anticipations, as may the effect of a decrease by pessimistic anticipations. It also varies greatly with groups, countries, times (see, above, Sec. B). But such indications as we have strongly point toward steadiness of rate. This is the result which has been arrived at for postwar Germany by Professor Wagemann,[1] and which suggests itself for this country also, if we may put our trust in the evolution from 1880 of the assets of life insurance companies[2] and in the deposits in mutual and stock savings banks. The latter display a (logarithmically) straight-line trend from 1840 to 1876—which, no doubt, is largely a "special" one in our sense of this term—the small deviations from which are, however, clearly positive during the prosperities of the fifties and early seventies. Then we observe decline to 1879 and, from that year on, again straight-line increase (though of a smaller gradient), interrupted by kinks in 1893, 1908, and 1914. So depression, as well as prosperity, does assert itself in this series, but, the material being what it is, the outstanding fact—the steadiness—is the only safe one to stress.

Again, as in the case of the application of savings to the repayment of bank loans, it should be noticed that, even if saving and accumulation involved the "locking up of money," the consequences usually attributed to them by antisaving theories would not necessarily follow. In that case, accumulation from profit would tend to dampen the excesses of booms exactly as restrictive open-market operations undertaken by central banks. And the dis-saving during deep depressions—the depletion of the accumulated surpluses of corporations by deficits and dividend payments and of the saving deposits of the small savers by current expenditure—would tend to alleviate them. If we observe so little of these equilibrating effects, this is because there is so little "locking up." Also, the importance of the cyclical "release" of savings should not be overrated. Prosperities are, to be sure, periods of supernormal real investment; and depressions, of subnormal real investment. Savings like other funds are active in the former and inactive in the latter. But, as we have seen, it does not follow that investment must decrease in *recession*, for all the demand for funds incident to the conquest of new economic space then asserts itself, and there is, moreover, that type of

[1] See, for example, Einfuehrung in die Konjunkturlehre, 1929, p. 117.

[2] See Carl Snyder, *op. cit.*, chart on p. 203. That evolution is almost perfectly fitted by a (logarithmic) straight line and displays but insignificant fluctuations. Observe the relation almost amounting to parallelism with Capital Invested in Manufactures.

demand which waits upon a fall in interest—demand for dwelling-house building, in particular.

5. We return again to Chart XXV, in order to study more closely the relation between customers' balances and loans (and discounts) of national banks. As has been pointed out in 2, the picture "is of two series which move closely together, and yet with notable differences" (A. A. Young, *op. cit.*, p. 5). The covariation stands out particularly well if we eliminate the descriptive trend, an operation that is less objectionable than it otherwise would be, if we keep within a Kondratieff

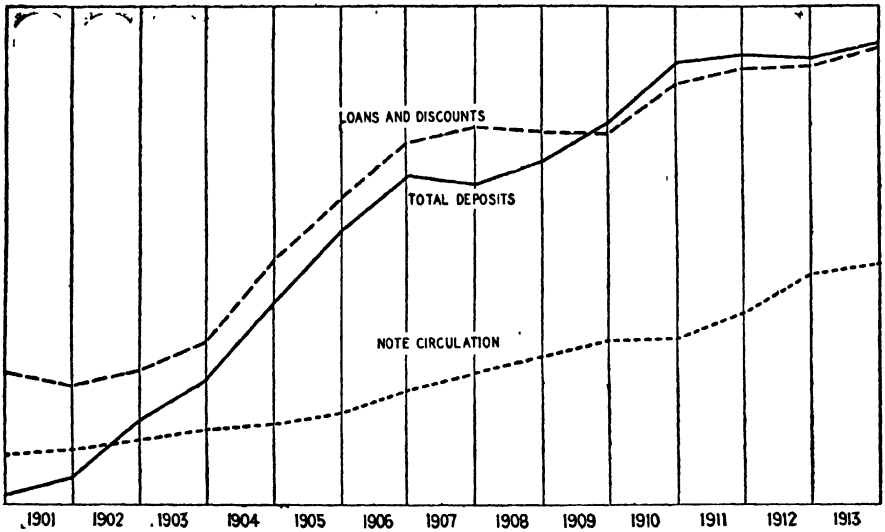


CHART XXXII.—Germany (see Appendix, p. 1063).

phase, as Professor Young substantially does in his chart 15 F (*ibid.*, p. 27),[1] which covers the years from 1901 to 1914. But the essential fact so important for the understanding of prewar banking at least—*viz.*, that the movement of loans dominates the movement of deposits—is obvious in any case. Nor is this covariation confined to those shorter fluctuations which are traditionally recognized as "cycles." Of course the longer the period we survey, the more extraneous elements will assert themselves, and we shall not be surprised to find that covariation is particularly close in the course of Kitchins and Juglars. But the phases of the two Kondratieffs are also recognizable and influence both series similarly. Chart XXXII presents the German case.[2]

[1] Comparison is there with Net Deposits, but this does not matter for cyclical, although it would for seasonal, movements; *cf.*, same chart B.

[2] In perusing that chart, it is necessary to keep in mind that total deposits do not mean exactly the same thing or hold, as far as they do mean a comparable magnitude, the same relative position as in the United States. It must also be remembered that deposit banking

The covariation between loans and deposits must of course be disturbed by member banks' investments. In national banks outside New York City they fell from a level of roughly 10 per cent of loans and discounts at the beginning of the series to a minimum of 24 millions (Feb. 28, 1873), but within our period they reached 898 millions, or about one-sixth of loans and discounts (June 30, 1914), the increase from 1897 to 1902 helping to push the deposit up to the loan series. This subject belongs to the sphere of banking practice and will be taken up in Chap. XIII; but we may note at once that the impression of an erratic behavior of investments in the course of cycles is, apart from the special trend that is clearly present in them,[1] due to the conflict of two tendencies: the one which clearly prevails, at least in the shorter fluctuations (see A. A. Young's chart 15 II, *op. cit.*, p. 27), and works toward negative association of investments with loans, the banks employing in slack times idle funds in the purchase of assets, thereby creating idle deposits that help to steady the deposit series; and another and weaker one, which proceeds from firms and individuals' liquidating their holdings of bonds—when in busy times they have more profitable uses for their funds—and which works towards positive association with loans and intensifies fluctuations of deposits.

But there are other factors which will enforce deviation from the fundamental parallelism of loans and balances. One is variation in the capital and surplus item. In national banks outside New York City this item grew from less than 400 millions in 1867 to over 1½ billions in 1914. It clearly displays the influence of the cyclical process, following as it does on a trend of smaller gradient[2] the movement of earning assets (see A. A. Young, *op. cit.*, Chart 2 on p. 5 and Chart 9 on p. 22). Another factor is variation in original deposits. The spread of banking habits and the consequent immigration into banks of money that used to circulate outside of them would in itself suffice to impart another special trend to the loan-deposit ratio. Apart from this, it is easy to realize that original deposits will also fluctuate cyclically and that they will reflect the influence of gold movements, although in the latter respect it is interesting to note that neither the deposit nor the loan series behaves very differently before and after the intrusion of the new gold. If we had no other information than that conveyed by those two curves,

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in general and the business of the banks that contributed the figures in particular, rapidly gained ground during that period. This partly accounts for the steep gradient from 1903 to 1906 and again in 1910. In order to bring this out, the series showing the development of note circulation has been added.

[1] See *infra*, Chart XXXIV.

[2] The fact that that gradient is smaller than the gradient of the earning asset curve reflects, in part, the relative decrease of hand-to-hand circulation (see below).

we should hardly be able to infer that something had happened to alter the monetary data of our process. Finally, as long as coins and notes circulate at all, and especially if farmers, craftsmen, wage earners, and their retailers live to a significant extent outside the banking sphere, the total of balances will, other things being equal, tend to increase and decrease cyclically by less than loans,[1] because cash is gradually withdrawn from every original or newly created deposit when business is brisk and, however quickly redeposited, dwells in greater amounts outside the banks in prosperity than in depression.

These considerations suffice to explain why, on the one hand, the loan-deposit ratio is itself a cyclical variable, and why, on the other hand, it is not always easy to interpret its fluctuations or its trend. Mainly because of the predominantly inverse association between investment and loans and of the cyclical drain and reflux of cash, that ratio moves with an understandable lag in the same direction as its constituents.[2] But several circumstances besides those mentioned above—depletion of deposits by hoarding from distrust in banks, for instance, or legislative changes—combine to interfere with that rule. We may now inspect Chart XXXIII, on which circulation (notes outstanding) has been added to individual deposits, both on the theory that bank notes are fundamentally the same kind of thing as customers' balances and on the much more doubtful theory that the variation in their amount is indicative also of short variations in the amount of legal tender in the hands of the public, therefore, of the total of money outside the Treasury and all banks. Over time, of course, the circulation of national banks is too much under the influence of factors peculiar to them to be of much significance for us.

As far as the variability of the loan-deposit ratio is due to the cyclical depletion and repletion of deposits by cash moving out and in, the ratio between money in circulation and deposits must also be a cyclical (and seasonal) variable. So it is, of course, and the explicit or implicit assumption characteristic of several well-known versions of the quantity theory, *viz.*, that it is constant, can only hold for a perfectly stationary state. In a nonstationary system this assumption cannot even hold

[1] Actually, deposits fluctuated more than loans, though not so much more than in New York banks. This is not difficult to understand. It must be remembered, however, that what we have before us are the figures not of a complete system but only of a segment.

[2] According to Professor W. M. Persons, Cyclical Fluctuations of the Ratio of Bank Loans to Deposits, 1867–1914, *Review of Economic Statistics*, October 1924, this lag is about six months. While deposits and loans themselves fluctuate concurrently with each other and the Harvard Business Curve, their ratio thus fluctuates concurrently with the Harvard Money Curve. This is as we should expect. Professor Persons, however, uses the ratio we are discussing only for the last prewar decade. We shall not be astonished to learn that those relations are less clearly discernible before 1900.

over time—say, for successive neighborhoods of equilibrium—for our process changes the relative importance of the transactions directly settled by cash: it is the most powerful factor responsible for the immigration of money into banks, *i.e.*, the spread of the habit of paying by check, which in turn is the most powerful factor in the expansion of the lending

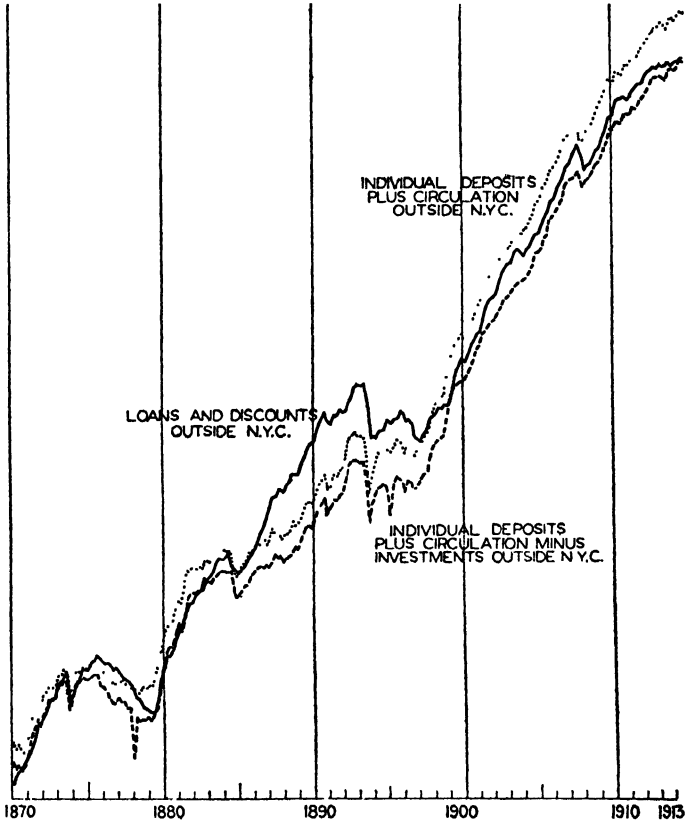


CHART XXXIII.—United States (see Appendix, p. 1063).

facilities of banks. This, first, helps to account for the fact that the loan-deposit ratio has been constantly falling over time.[1] While this ratio can be observed in the (outside) national bank data, measurement of the second ratio—that between currency in circulation outside the

[1] It averaged about 160 per cent in the seventies and fell in every successive decade, until it practically reached 100 per cent by 1910. This is, of course, not only due to deposits losing less and less to outside circulation, nor can the sharp jerk from 1879 to 1881 be explained in this way. A few figures should be added: Between 1875 and 1914 loans and discount rose about seven fold, individual deposits more than elevenfold (11.3). "Lawful Money Held" by the same banks was 76 millions on Mar. 1, 1875, and 642 millions on Mar. 4, 1914; Capital and Surplus on the same dates were respectively 536 and 1,539.

Treasury and all banks and total deposits—is, as we have seen, a more doubtful matter. But at least from 1890 on, these data cannot be so faulty as to shake our confidence in the strongly falling trend they display.[1] Third, the ratio of outside circulation to loans plus investments also has an obvious significance of its own. Mr. Carl Snyder tried to estimate it[2] from an estimated series of outside money and from national bank loans and discounts "adjusted upward to the level of all commercial banks in 1913." But whatever might be urged against this, the salient fact is again beyond doubt. Since the fall in all three ratios is substantially the result of the cyclical process of evolution, we may speak of result trends.

6. The reader should once more refer to Chart XXV and then inspect Chart XXXIV, which, although very inadequately, presents the behavior of indicators of what is, in one sense or another, called Investment. The graph of member banks' investments as represented by the investments of national banks outside New York City has been inserted merely for the purpose of showing—what would be more obvious if a descriptive trend had been eliminated—that their fluctuations are about as much inversely related to production of industrial equipment as they are to loans and discounts, that is to say, predominantly yet not entirely so. There is again more than a suggestion, as there was in the comparison of loans with deposits, to the effect that selling assets to banks is to a significant extent resorted to by individuals and firms as a method of providing funds for industrial expansion. Building Permits do not merely reflect investment—since the building of residences for one's own use is not investment in our sense—and behave as erratically as such a composite of consumers' and investment goods should.[3] All affinity with the move-

[1] *Cf.* Professor Angell's ratio h on his Chart II in Behavior of Money, 1936. The deposit figures used include all deposits in reporting banks, also in postal savings banks, and both government and interbank deposits. The float is, however, deducted. But the present writer is not able to agree with his statements that outside currency, circulating deposits (deposits subject to check—bankers' balances—clearing house exchanges) and the ratios of outside currency and circulating, as well as total, deposits do not display clear cycles or that there is no evidence of direct causal connection between currency and deposits. On the contrary, all our fluctuations seem to show very well: the downward sweep of ratio h from 24 per cent in 1890 to 10 per cent in 1914 is broken in every prosperity, intensified in every recession or depression. It should be added that that downward tendency is exaggerated because of the decreasing importance of the money held by nonreporting banks.

[2] "The Problem of Monetary and Economic Stability," *Quarterly Journal of Economics*, February 1935; see chart on p. 192.

[3] The Berlin Institute's study on industrial investment and financing quoted in a previous note presents a chart which compares the increase in industrial buildings (Fabriken und Werkstätten) in 32 cities from 1895 to 1913 with pig-iron consumption, trend being eliminated. The covariation is striking, with industrial building construction slightly

ments of loans and discounts is not wanting, however, especially until the end of the second Kondratieff, although it reveals itself more readily to an analysis of underlying business situations than it would to formal measurement. The covariation of New Security Listings—intended to indicate roughly fluctuation of households' investment—with loans and discounts is, except in the early nineties, fully as strong as we can expect

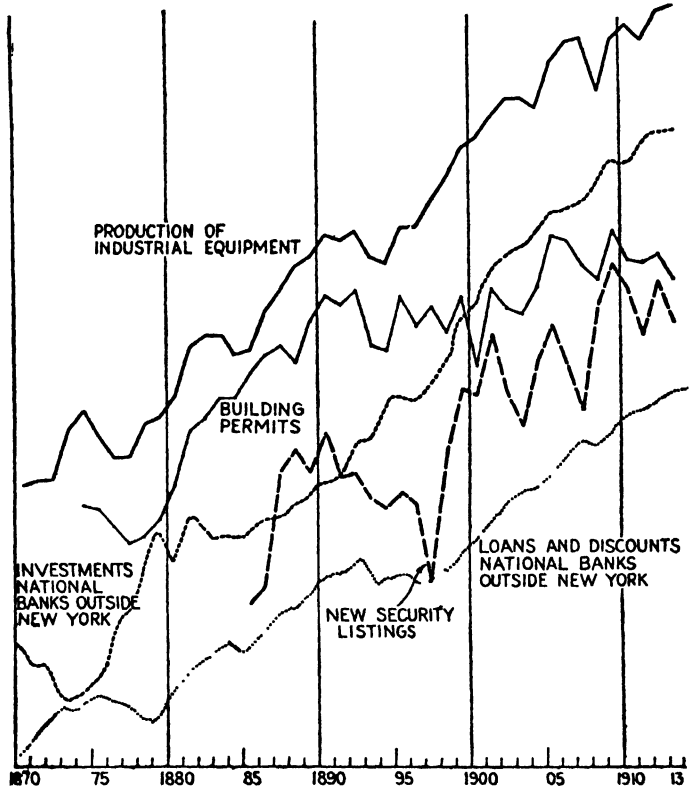


CHART XXXIV.—United States (see Appendix, p. 1063).

if we bear in mind the difference in the "temperaments" of the two series and the difference in structure of the "resonators" of which they are the products. Firms' real investment is again represented by an index of the production of industrial equipment. Its graph consistently draws away from that of loans and discounts, but otherwise varies with the latter, though again in the manner agreeable to its temperament—a strong jerk in the one often corresponding to a mere kink in the other. Both series display the two Kondratieffs in much the same way, clearly

but almost consistently preceding. Industrial building would *on this showing* turn out to be an even better index—or forecaster—than pig-iron consumption.

show the Juglars, move together in the Kitchins. The reader should satisfy himself that such exceptions as seem to occur are no more than understandable lags. Even the fact known to all of us from everyday experience, that there is such a thing as emergency borrowing and that every well-connected concern can go pretty far in this direction, need hardly ever be invoked.

The time shape of loans, therefore, corresponds—in the long and in the short run; in trend and in all the cycles—as perfectly to expectation from our model as the time shape of deposits that it controls. But again, if we go on to say that their behavior is illustrated and explained by the behavior of the pig-iron consumption or equipment-production series, we are adding something to the testimony of our charts. Repeating the corresponding argument submitted in the case of system expenditure, we have once more to recognize that, although perfectly safe and supported by common opinion, the proposition that investment is in prosperity, though not in revival, the propeller of general business activity and hence controls the behavior of loans and balances, is such an addition from other evidence, an addition moreover which is not so sheltered by triviality as the proposition that loans control deposits and not deposits, loans.[1] Less safe, however, is the further addition that loans substantially contribute to the financing of real investment, and still less the final one that they are the—logically primary—source of real investment incident to innovation. As far as time-series evidence goes, it would be just as possible to say that it is the movement of loans and deposits, itself determined by monetary conditions and policies, which induces and controls real investment, or that initiative is not with entrepreneurs but with banks.

This issue can be decided only by theoretical and historical analysis of the capitalist process, such as has been attempted in earlier chapters, where it has also been pointed out that the fact that loans and discounts mainly finance current operations—in each cycle perhaps preponderately those of the Secondary Wave—and even consumers' expenditure, contradicts our interpretation in appearance only, and that the extent to which they actually serve the purpose of financing long-time commitments and in particular industrial plant is likely to be underrated, because that purpose hides itself. We have seen by such outstanding examples as the rise of the automobile industry that it need not be the entrepreneur who borrows from a bank, but that the burden can be shifted to the firms who furnish the materials or market the product; or that the stock exchange speculator or the investor who takes new issues

[1] Of course, in another sense that proposition is not trivial, *viz.*, in the sense that it is loans and not member banks' investment which dominated the behavior of deposits in the period under discussion.

may, and very often does, borrow instead of the entrepreneur. But we have also seen in the historical chapters plenty of indications of bank loans' being directly used for the purposes of innovation, especially in this country,[1] less so in Germany, least of all in England. In fact, if the reader will refer to the list of the methods of financing system expenditure at the beginning of this section, he will have no difficulty in satisfying himself that it must be so. Though borrowing from banks is not the only way of—directly or indirectly—financing innovation, and though bank loans also serve many other purposes, our schema cannot be so very far from practice after all; for most of those methods are either inadequate or not available for the purpose of innovation which starts from scratch.

Glancing over our list of methods of financing, we readily see that deflection, overspending, and the use of temporarily available funds will neither be open to a new firm nor, in general, prove sufficient to finance large-scale plant and equipment. Accumulation and saving provide the means for consolidating rather than for building up industrial ventures. In any case, they owe their actual importance only to previous entrepreneurial success and serve, besides repayment of debt, induced expansion rather than the creation of entirely new things, although the latter function has always played a considerable role from the times of primitive, through the times of competitive, to the times of "trustified" capitalism. The same applies to selling assets to non-banks. Neglecting items of secondary importance, we are thus in fact left with selling assets to, and borrowing from, banks, as influenced by borrowing from, and lending to, foreign countries. A rough correspondence between innovation and loans, still more between innovation and deposits, is hence not as improbable as it might seem at first sight.

[1] Some further indications may be noticed, however. Mr. Moulton, bolder than the present writer, has actually presented an estimate of the relative importance of the advances made by banks in 1916, that went to "fixed capital operations," and found them to be 55 per cent in the case of national, 62.1 per cent in the case of state banks, and 68.2 per cent in the case of trust companies (*Journal of Political Economy*, June 1918). The responsibility is Mr. Moulton's. Or see C. O. Hardy and Jacob Viner, Report (to the Treasury Departments), on the Availability of Bank Credit in the Seventh Federal Reserve District, which states that many short-term loans (not to speak of mortgage loans, of which those on non-farm land are certainly relevant to our argument), being in fact renewed indefinitely, are used by borrowers for the purpose of financing expenditure on plant and equipment. Part of these loans must finance enterprise in our sense.

CHAPTER XII

The Rate of Interest[1]

A. Earlier Argument Resumed.—Resuming our argument about the rate of interest where we left off in Chap. III, Sec. E, and recalling that we look upon it, on the one hand, as a premium on present over future means of payment or "balances" and, on the other hand, as a coefficient of tension in the system, we will first of all develop some of the aspects of the theory there presented. It is convenient to take the first step under cover of all the simplifications of the pure model: once more nobody is to borrow except entrepreneurs, nobody is to lend except member banks which create the required "funds" *ad hoc*, all other business—consisting only of purchases of producers' goods and sales of consumers' goods—being financed from previous receipts. Excluding, moreover, for the moment what, in Chap. III, Sec. E, has been defined as the Open and the Central Markets, we have at least the comfort of facing one rate of interest only, which no doubt may differ as wages do in different parts of the system, but can, nevertheless, be used in the same way as *the* wage rate. While all these simplifications will be dropped within this chapter, we defer to the next the consideration of international capital movements and as much as possible also of everything that happens within the walls of member banks' committee rooms beyond acceptance or refusal of applications submitted by entrepreneurs on their own initiative. In other words, in this chapter we deal primarily with closed domains and with a "passive" banking system, in order to see how great an expanse of observed fact can be covered within these restrictions.

1. In the absence of *consumers'* time preference, innovation, or the expectation of profits in our sense of the term, is now the only factor to produce, in an otherwise stationary and undisturbed world, a positive premium on present balances or to make present dollars worth more than the same amount of future dollars. Looking at any amount of dollars plus the profit an entrepreneur hopes to realize by means of it as his "demand price" for that amount, we seem to be able to build a curve or schedule of entrepreneurial demand for present dollars, the ordinates of which are

[1] Reference should be made again to Theory of Economic Development, Chap. V. But the reader is once more reminded that many of our propositions are not dependent upon the writer's theory of interest.

expressed in terms of future dollars, and to conclude in the familiar way that interest will equal marginal profit, *i.e.*, not merely the profit of the marginal entrepreneur but, since we may postulate that every entrepreneur can continuously vary the size of his commitment, the marginal increment of prospective profit for all. But such a construction means very little in our case, although it has the merit of showing the nature of the link between our monetary theory of interest and the general theory of the industrial process. We have not only to recognize, as we always have, that no causal significance attaches to marginal values but also that all the significance they have lies in the setting up of equilibrium conditions. Our case, however, is essentially one of disequilibrium and the circumstances that determine marginal profits are being changed, and known to be changing, every moment by the very process we are trying to describe.[1] What we can hope to get at, therefore, is at best a rough equivalence between interest and marginal prospects of profits or a condition not of equilibrium in the full and proper sense of the term but of *adapted variation within our process*, *i.e.*, of covariation such as will not by itself enforce additional adaptation of other elements of the system. This is all we have to offer in place of the various definitions of the concept, Equilibrium Rate of Interest.[2] The true equilibrium rate, *i.e.*, the rate that would obtain in a stationary process perfectly equilibrated in all its elements and displaying no tension at all, would as we know be zero.[3]

Even if we decide to neglect these difficulties and to speak of such a demand schedule after all, we have still to recognize that, more than any other, it shifts violently in the cycle. This trivial consequence of any

[1] That the analogy with the demand schedule for a factor is treacherous is also obvious from the fact that well-behaved demand schedules presuppose invariant production functions. In our case, production functions are being altered or new ones are being built up. Moreover, capital in our sense, not being a factor of production, enters neither the existing ones nor the new production functions.

[2] As pointed out in Chap. III, Sec. E, that condition to some extent stands in the place of the two conditions that are required in the Wicksellian system, *viz.*, first, that the natural rate of interest should be in equilibrium—for example, that the rate of time preference should equal the rate of technological superiority of present over future units of original means of production—and, second, that the monetary rate should equal that natural rate. For a development (and improvement) of this theory see G. Myrdal, Der Gleichgewichtsbegriff als Instrument der geldtheoretischen Analyse (Beitrage zur Geldtheorie, ed. by F. A. v. Hayek, 1933). From theories of the equilibrium rate of interest we should distinguish theories of the equilibrating rate of interest, for it is obvious that the two do not necessarily coincide. A rate that fulfills the ordinary conditions of equilibrium, for instance, a rate that clears the market of savings, might, nevertheless, be the cause of disturbances, for instance, through its action on price level. Whoever holds that it would and that another rate would not had better state separately the conditions that define the two.

[3] But, once more, the author does not here insist on this proposition.

analysis that admits any relation at all between interest and profits in our sense is also so obvious to any observer of business life that it should be superfluous to state it. Yet it is constantly overlooked. The exaggerated ideas that many economists entertain—though perhaps somewhat less so now than they did 10 years ago—about the effectiveness of a reduction of the rate of interest in inducing investment is understandable only on the hypothesis that they assume—besides a full measure of *ceteris paribus*—that the demand schedule for funds is substantially invariant, at least for periods as long as Kitchins and perhaps as long as Juglars. The familiar calculations first stressed by Wicksell of the tremendous difference it makes to railroad building whether interest is 1 per cent higher or lower, on the one hand, and the frequent recurrence of complaints about the failure of interest to fall adequately in recession and depression, on the other, which are so curiously at variance with the fact that new investment and even replacement is primarily—we have met exceptions—associated with relatively high and rising money rates, prove better than anything else how completely most economists still think in terms of expansion within unchanging production functions and how reluctant they are to recognize that in the cyclical process shifts and distortions of the schedule of demand for balances are much more important than movements along it. There are situations in which zero interest would entirely fail to call forth any additional demand.

2. These shifts of the demand schedule for balances are, of course, intensified by the operations that constitute the Secondary Wave. This phenomenon we have already met with in the case of wages, but it asserts itself much more directly and much more strongly here. There is, however, another kind of shift which still more seriously interferes with the application of the demand-supply apparatus whenever there is full employment of resources. Then a net increase in balances created in response to business demand[1] enforces a rise in price level, induces expectations of further rise, and for both reasons further increase in demand for balances, so that that demand schedule tends to shift also in function of the amount of, and increase in, the balances themselves, and in consequence completely ceases to be independent of "quantity of commodity," as a demand schedule should be. If entrepreneurs really were the only borrowers, we should not commit any great error by neglecting this effect. For, as we have seen, entrepreneurial action is not typically taken on an expectation of a rise in price level or under the influence of a price level that has risen already. Moreover, although entrepreneurs may not be aware of the falling result trend in price level, they cannot but be aware of the fall to be expected in the prices of their

[1] It will be observed that this is not equivalent to saying that any net increase in balances created will, even with full employment of resources, necessarily have that effect.

own products, which they themselves intend to bring about in order to use their innovations to the full and/or to undersell old firms; and this will in general suffice to prevent them from acting on a hypothesis to the effect that prices will go on rising forever. But actually, since there is at any time in prosperity a large mass of windfall gains in prospect, the general willingness of business to pay interest will, both because of the mechanical effect of rising prices on the money cost of doing business and because of extrapolating anticipations, increase—and correspondingly fall in depression—by much more than it otherwise would. The rate of interest will hence no longer be explainable by the fundamental factor alone, not only because there are other borrowers, but also because many of them strongly react to the rate of change of prices.

It follows that what we have termed the Adapted Rate must now be defined with reference to a "demand schedule" for balances in terms of expected windfalls, behind which the entrepreneurial profits that "ignite" the process may at times entirely disappear. This rate will differ, in prosperity positively, in depression negatively, from the one that would be appropriate to entrepreneurs' profit expectations over time, and change literally every hour. But it will, in general, also differ from what we may call the equilibrating rates, *i.e.*, the rates that would tend to counteract disturbance. For the adapted rate will not do that as long as prosperity is in full swing and as long as the balances that are being created in every point of time incessantly change the conditions under which the corresponding loans were applied for.[1] This fact underlies all arguments for an active policy of banker's banks in prosperity and for "punitive" rates. In a competitive banking system member banks will charge the adapted rate and then "catch up" only when windfalls, as well as profits, begin to fall in the course of the cyclical process.

This being one of the causes of what is usually referred to as the Lag in Rate of Interest, we will take the opportunity of disposing of it at once. Discarding the spurious lag resulting from the failure of students of the cycle to distinguish between revivals and prosperities, and also the frictional lag that is naturally incident to a relation such as establishes itself between a bank and its customers and is intensified on the upgrade by the pressure of public opinion[2] and on the downgrade by risks and fears, we have, besides the one mentioned in the preceding paragraph, a fundamental reason for expecting that interest will tend to lag behind other cyclical symptoms. It can best be described in terms of our pure model. There prosperity starts from zero loans, so that the lending

[1] This may be called a cumulative process and bears some resemblance with what is known as the Wicksellian cumulative process. Possibly we are visualizing the same facts as Wicksell. But the two arguments themselves have little in common.

[2] Frictional lag is, however, almost entirely absent from open market rates, which in fact are the most active ones by far.

power of banks is entirely unused, while, at least in perfect equilibrium of perfect competition, all the factors of production are used to optimum points. In reality this is not so, of course, but our abstraction still serves to show why full employment does not imply that full use be made of the existing machine for the manufacture of credit and why this machine will in general be underutilized in a neighborhood of equilibrium. Now in a world conforming to the pure model, interest would also start from zero and hence be one of the first elements of the system to move. But since there is actually in every neighborhood of equilibrium a positive rate at which banks will in general be glad to expand their loans, that rate will not rise immediately.

3. Thus the demand curve for balances is, even with greatly simplifying assumptions, an instrument of doubtful value. But the value of the corresponding supply curve is more doubtful still. Certain difficulties would remain, even if we could interpret it as the supply curve of savings, as older doctrine did. But at least there would then be some kind of cost curve to derive it from and hence at least some definite meaning to it. Since, however, this is out of the question, and since it would similarly not help us much if we tried to build a bankers' cost curve in terms of increasing risks, the natural thing to do seems to be to drop "supply" and to fall back upon "quantity existing."[1] But this too would be entirely unrealistic, because, as has been explained in Chap. III, Sec. D, there is never any such thing as a definite quantity of bank accommodation available, not even in a perfectly competitive banking system—if every bank moves *pari passu* with the others—while in an imperfectly competitive one the individual bank has a large space to maneuver in. Boundaries are not lacking, but we have seen how very elastic they are. Hence, it is necessary to recognize an element of indeterminateness in the problem of interest, which is precisely the theoretical reason why regulating the money market differs in kind from regulating any commodity market.

We may now insert the two other major items that stand alongside the created balances—savings,[2] and funds that are temporarily available, either because they are being assembled for lumpy acts of expenditure or because their owners have decided to restrict operations. We recall our concept of Temporary Investment and note for future reference that it plays a role in the theory of the rate in the open market, where those

[1] It should be obvious without further explanation that the sum total of deposits would not measure that quantity or the "supply of bank credit" any more than bank loans measure the "demand" for it.

[2] The rate of savings could be made a function of the rate of interest only by very severe *ceteris paribus* assumptions. Even then it would, as everyone now admits, not be a simple or a monotonically increasing function. But this is no reason to deny the existence of a functional relation. The same applies to the inverse relation which, in Chap. III, Sec. A, we were able to deal with so simply because we assumed otherwise stationary conditions.

funds join forces with the otherwise unused means of member banks.

Similarly, we may now insert the other major items of total borrowing. These consist, first, in the amount of borrowing that proceeds from the Secondary Wave already mentioned, the requirements of induced and adaptive expansion, and also those of current business, since as a matter of fact current business, too, is partly transacted on a credit basis. And, in the second place, there is the vast amount of consumers' and quasi-consumers' borrowing, in which we include the emergency borrowing by firms; the cases (which are numerous, especially in the agrarian sector) of borrowing which, while in name productive, mainly serves purposes of consumption; and finally, the borrowing of public and private households. The cyclical behavior of some of these items is doubtful. We have, for instance, seen reasons to believe (Chap. XI, Sec. B) that at times private households borrow more, both in the form of installment contracts or open accounts and in the form of loans, in prosperity than they do in any not too prolonged depression. But this may not be so true of prewar times and Europe as it is of postwar times and the United States. Government borrowing, as far as it is incident to war and preparation for war, is erratic. We might, however, also expect to see a cyclical component, owing to the fact that revenue falls off in deep depression, even though depression expenditure did not in our epoch play the role it came to play after the World War. This expectation is not entirely disappointed, witness the English case in the last years of the Melbourne-Russell government. But in the times of "sound" fiscal policies such cases were the exception, not the rule. Goschen's budgets more than balanced in the midst of depression. The heavy borrowing of the German Empire occurred in the prosperity phase of the third Kondratieff.

It will be observed that some of the remaining items tend to intensify, others to mitigate, those cyclical variations in interest rate that we would expect from the entrepreneurial impulse alone. But it will be also observed that with the exception of the requirements for induced expansion or adaptation, which will tend to keep up the rate of interest in recession, there is little reason to expect that they will substantially alter its time shape.

4. From its source interest spreads, as we have seen, all over the system. A premium on present dollars in any sector is sufficient to enforce a general premium in all. Thus interest intrudes into every transaction, calculation, and valuation, turns time into a cost factor, and becomes that subtle and omnipresent entity that acts on and reacts to everything and is so difficult to trace in all its protean forms. Every unit of currency or deposits, wherever placed or circulating, has, in order to stay where

it is or to go on in its circuit, to resist a pull toward the money market, which at the margin is measured by the rate of interest. This point may be illustrated by means of a Wicksteedian demand curve if, for the moment and for the purpose of illustration only, we assume that there is such a thing as a definite quantity of (cash and) balances in existence, including the amount, also assumed to be given at any point of time, which banks can technically create beyond what they actually have created at that given point of time. The Wicksteedian demand curve refers price not to the quantity of a commodity that buyers are willing to take at that price but to existing quantity, *i.e.*, that quantity plus the quantity which owners keep at that price. Accordingly, we may look upon every unit of actual or potential balances as "offered" on the money market and taken from it either by its owner or someone else. The owner must then be thought of as paying interest to himself, either in the form of some element of return if he uses his money in his business, or in the form of some satisfaction (equivalent to the loss of interest involved) if he does not.[1] But apart from being applicable to the case of perfect competition only, this schema presupposes a string of assumptions that are entirely inadmissible in the case of money. Although it may be used to clarify that delicate point at which our theory proceeds from the analysis of the logical sources of interest to the analysis of interest as an all-pervading phenomenon, it should not be taken too seriously.

In this sense interest may indeed be said to hold a central position in the system. But again, precisely because it does, it is easy to slide into exaggerations of the influence unilaterally exerted by it and to forget that a *central* position does not imply a *key* position, particularly in the cyclical process of evolution. Just now, however, two cognate errors call for our attention.[2] With the growth of capitalist mentality, an obviously useful habit has developed, the beginnings of which are in Germany, for instance, observable since the fourteenth century, of expressing any return, except returns to personal services, as a percentage of a capital value. But it is an error to conclude that these returns are turned into interest thereby or, worse still, that they are the basic fact about interest and, barring temporary discrepancies, fundamentally determine the money rate. What any durable product yields—no matter whether a consumers' or a producers' good, though rational calculation is understandably more in evidence with respect to the latter—once it has

[1] Viewed from this standpoint, interest could also be defined as the price that it is necessary to pay to a holder of actual or potential balances in order to induce him to part with "his money." Thus we meet, for a moment and under very restrictive assumptions, the concept of interest which has, in the General Theory of Employment, Interest and Money, been adopted by Mr. Keynes. But the point of tangency between our argument and his is not more obvious than the divergence of the curves.

[2] For a full discussion of what follows see Theory of Economic Development, Chap. V.

come into existence, is and remains (temporary) quasi-rent, however we may express it. It is neither the same thing as interest nor identically equal to interest. The other error consists in the interpretation of the discounting process by which the capital value of a durable good is arrived at and which indeed establishes a relation of mutual dependence—ideally, equality at the margin—between quasi-rents and interest. But it does so by applying a logically prior monetary rate of interest—that monetary rate which is expected to prevail during the life of the good[1] in the sector within the horizon of the firm or household concerned—to the sequence of the expected installments of quasi-rent evaluated in money, and not by virtue of an interest logically independent of money. It, hence, presupposes the monetary rate, instead of controlling it.

Of all the ramifications of this principle of evaluation and all the qualifications that it calls for, only two need to be touched upon. First, we have again, as in the case of the demand schedule for balances, to bear in mind that the demand schedule for durable goods—which, though doubtful enough, is nevertheless more like what a demand schedule should be—is subject to very strong shifts and distortions, which, in the course of cyclical phases, are more important than any movements along it. Professor Moore's rising-demand curves for steel and other products that enter into durable goods (Chap. X, Sec. A.) give a good idea of how completely the latter are overshadowed by the former. This, of course, is only what we should expect. But it practically implies an analogous proposition about the influence of variations of interest. Although this does not impair the logical validity of the theorem that values of such goods will, *ceteris paribus*, rise and their production become more profitable if a fall in the rate of interest occurs or is anticipated, it does impair its relevance to our subject. The outstanding fact that is really relevant to our subject is the positive association of rate of interest and value of capital goods. Our motive for insisting on it is, again, that many statements in older as well as more recent literature are understandable only on the hypothesis that it has been overlooked.[2]

[1] That life is not a (technological) datum but a variable of the problem; but this, like other minor points, need not concern us here.

[2] The objection which might be raised against the above argument, *viz.*, that it is not the money or the natural rate that counts, but the difference between the two, misses the point, or, if natural rate is but another name for profits in our sense, merely reformulates it. But the above argument should not be interpreted to mean that financial editors are wrong in hailing a falling rate of interest as a hopeful symptom in a difficult situation. Although its causal importance may be next to nothing—we do not evaluate it at zero, however—it is a symptom of decrease of strain, of progressing adaptation and liquidation, and in many cases it is, and especially was in the nineteenth century when panics were allowed to have the effect of forcing up the rate, a sign of the worst being over. If the businessman clamors for cheap money, that means as much as and not more than his clamoring for cheap labor.

A second point turns on the fact that, even where it is possible to identify the rate[1] at which it is rational for a firm or a household to discount a given series of quasi-rents, we in general find a considerable discrepancy between the result and actual values of durable goods or going concerns. There are many obvious reasons, both sociological and other, which need not detain us, why, *e.g.*, rural real estate at times sells much above the price our principle would indicate. But one of these reasons is especially important for the subject in hand, *viz.*, the risks and chances of depreciation and appreciation incident to ownership of an individual piece of property. Whoever acquires a durable good commits himself. He chooses one out of an innumerable host of possible sets of risks and chances, which differ not only as to the objects or groups of objects to be bought, but also as to the point of time at which to effect the purchase. In doing so he, to some extent, foregoes the opportunity of better sets offering themselves, to which, after having taken action, he cannot shift over at all or to which he can shift over only with difficulty and at a loss. This loss is peculiar in that the danger of it is present even in otherwise perfectly safe investments. For this the quasi-rent of an eligible set must provide compensation that will largely account for the discrepancies under discussion. Making up one's mind, therefore, involves forming, consciously and subconsciously, a great many anticipations about the future behavior of relevant factors, the net marginal result of which, currently corrected, is for the public as a whole theoretically measured by those deviations.[2] One of these anticipations refers to the future behavior of interest. Inasmuch as this may be the dominating consideration, we can perhaps say by way of a first approximation that deviations of the relation between values of investments, similar in other respects but involving comitments of different duration, from the relation supplied by our principle of discounting[3] express the public's marginal opinion about the future behavior of the rate of interest.

[1] For reasons which, if not obvious, will presently appear, that is often difficult and sometimes hopeless. Moreover, in highly imperfect situations in which all or some concerns, instead of behaving like drops in a sea, are more like discrete islands conditions between which are never fully equalized and which have their special markets not only for their products but also for their factors, it is quite possible that some of those concerns also have semidetached money markets of their own, partly fed by their own accumulations or the savings of people—officers, workmen—connected with them. In such cases there may be point in speaking of an "internal" rate of interest as distinct from either *the* general one or that of other concerns. Fundamentally, however, and particularly in perfect conditions, the rate to discount with is always the market rate.

[2] As we have seen in Chaps. II and IV, these anticipations may act as disequilibrating factors, and this as much if they are borne out by events as if they fail to come true. But this is not necessarily so, and the case in which they have an equilibrating effect is practically more important than the others.

[3] It is easy to see that, even if valuation of durable instruments conformed exactly to that rule, the values of instruments of unequal durability would be unequally affected by

5. Now, the future balances, which according to our theory are the price of present balances, do not as such exist, and all the seller of present balances for the time being receives is promises. These must be embodied in legal instruments, the types of which vary as much as the types, situations, and particular purposes of borrowers and lenders—from the savings and (as far as it is not simply the same thing as a demand deposit) time deposit, the note and bill, the open account, and so on to the mortgage, the bond and, as from our standpoint we have to add, the share. And since all these embodiments of future balances bear from the actuarial and the investor's standpoint a surface resemblance to other marketable sources of returns, much of what has just been said could be repeated for them. Actually, the same operation is being performed on a sequence of expected interest and capital payments—or of expected dividend payments plus expected remainders of equity values—as on a sequence of expected quasi-rent installments. From this results the difference between bond rate and bond yield, for example, as well as the relation between them.[1]

The fact that titles to future balances differ so much in economic significance and that even a given economic configuration may be formulated, and the resulting claim safeguarded, in so many different ways, gives rise to what it is usual to call the Structure of Rates. There is no objection against thus emphasizing that fact.[2] But it should not blind us to the truth that, as far as this goes, the differences between the constituent individual rates are still only the same kind of thing as the differences between prices of different qualities of a good or the differences

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a change in the rate of interest. Such a change, therefore, tends to alter not only the distribution of productive resources between transient and durable goods but also the time structure of the latter taken by themselves.

[1] The reader will observe that from that perfectly general standpoint it is no longer possible to say that quasi-rents will be discounted in such a way that the net return resulting from this process will be marginally equal to pure interest plus risk and chance, because *for that purely formal purpose* the premium present balances can command bears no other logical relation to their "capital value" than the one which quasi-rents (though temporary; this difference disappears in the discounting operation) bear to theirs. What ought to be said now is that net return of whatever kind—whether interest or quasi-rent—tends toward equality at the margin with risk and chance (with the addition, perhaps, of such costs as the act of purchase involves, such as taxes or commissions). But this is only one of the many relations between interest and other quantities, which we may formulate as soon as interest pervades a system, and should not be included in any fundamental explanation of its nature. A similar formula equally true in a sense is this: We have seen that interest is a premium of present over future *balances* and not, as Boehm-Bawerk has it, of present over future *goods;* but insofar as the present balances are intended by "borrowers" to be spent on present goods, it might be said that interest is a premium of present balances over present goods. However, this again is more misleading than helpful.

[2] There is, however, considerable objection to replacing *the* rate of older doctrine by an index of rates, which would obliterate all that is most significant in that structure.

between wage rates within an economic domain. If there were no others, it would still be admissible and for certain purposes necessary to speak of one rate of pure interest from which the various observable ones differ by virtue of the element of risk and chance in the above sense; this, in fact, we have no difficulty in doing in everyday life.

There is, however, a cleavage that is peculiar to interest and that goes deeper than that, *viz.*, the cleavage between the rates in the three markets mentioned in Chap. III, Sec. E—the Money Market proper,[1] the Open Market, and the Central Market. It is this which "structures" rates fundamentally. That the money market and the central market do not stand on a par and are completing to each other and not competing is obvious. The open market owes its distinctive characteristic to the nature of the funds that flow into it and that are being lent, although at the same time bound to other purposes. The cleavage between this and the money market is neither in fact nor in logic as sharp as the one between the latter and the central market. Communication is much more direct, and money and open markets compete with each other. The distinction, however, is so important and emphasizes so essential an element of the modern financial mechanism that we cannot afford to miss it.

But by thus recognizing the existence in fact as well as in theory of a fundamental division into three markets of the total volume of trading in balances, we do not recede from our protest lodged in the last paragraph of Chap. III, Sec. E against another attempt at drawing such a fundamental line, *viz.*, between the money and the capital market. We can, of course, distinguish short- and long-term financing and, for purposes of description, can think of the latter as concentrated in a special market, which we may call as we please—capital market or stock exchange,[2] for instance. This special market or rather its component parts are, more-

[1] The writer has perhaps to apologize for his clumsy terminology, needlessly departing from that of financial practice, which uses the term *money market* synonymously with open market. It is more important that the above tripartite division does not seem to leave room for lending by other agencies than banks and quasi-banks. The lending transactions of households—there is and has been, for instance, in Germany a nonnegligible amount of mortgage loans given directly by households to other households or firms—and those transactions of firms which really—and not only apparently, *i.e.*, by means of bank credit extended to the lending firms—finance open accounts, installments and so on, should be considered as an appendage to the money market proper, although, of course, they produce different effects. In many cases firms, especially wholesale firms ("merchants"), must be looked upon as quasi-banks: in fact they often develop into private banks. We can thus peremptorily dispose of this matter because it does not greatly affect the drift of our argument.

[2] The stock exchange, which will not come in for discussion until the end of Chap. XIII, is for us simply an institution for the handling of transactions that belong partly to the money market and partly to the open market.

over, obvious realities that raise problems peculiar to themselves, and, in particular, produce their own gross rates of interest in the sense that is ordinarily meant when one speaks of the structure of rates. In this sense we shall presently use this distinction, although in doing so we shall merely speak of different sectors of the money market; but no significance deeper than that attaches to it. To say, for instance, that, while balances are the commodity in the money market, something that is not balances constitutes the commodity in the capital market (savings or capital goods) is not only utterly unrealistic but wrong.

Even if it be not held that the money and the capital market, in the sense of the theories just glanced at, differ in fundamentals, and if it be correctly recognized that in both it is balances and nothing else that is being traded in, and that such difference as there is consists only in the various accessories of the garb in which the promises of future payments put in their appearance, it is dangerous and often indicative of faulty analysis to overstress that difference. This easily suggests that money-market transactions—in this sense—have little to do with long-term financing and that capital-market transactions never serve the purposes of current business or that the former have only to do with the effecting of payments (*Zahlungskredit*) and the latter only with real investment. It need not be emphasized again how wrong all that is. Moreover, looking not at purposes but merely at the instruments in which future balances are embodied, it is not less wrong to think that long maturities must necessarily be financed by long-term funds. On the contrary, it is one of the most characteristic features of the financial side of capitalist evolution so to "mobilize" all, even the longest, maturities as to make any commitment to a promise of future balances amenable to being in turn financed by any sort of funds and especially by funds available for short time, even overnight, only. This is not mere technique. This is part of the core of the capitalist process.

The capitalist process develops, along with the money market (in our sense), perfect negotiability of all instruments of credit, whatever their legal form may be. Already (Chap. VI, Sec. A) we have insisted on the importance of the evolution in the course of the fifteenth and sixteenth centuries of the negotiable note or bill. But long-term financial contracts such as are embodied in a bond, a mortgage, and also from our standpoint in a share, became later just as negotiable in principle. In fact, we can say, if we except a small minority of cases, that for the individual "seller" of balances no investment in any such title is fixed in the sense that it binds his money for a protracted or any definite time. Fixity is thus reduced to, or rather replaced by, the cost incident to actual mobilization and the risk of not being able to "buy back" the balance without loss. Of course, a new bond or share may not attain perfect salability until it

has acquired standing; its special market may remain very limited forever; and for these and other reasons its purchase may involve the decision to keep it for a considerable time or not to sell it at all except when an occasion offers itself. But this does not alter the principle that in capitalist society—feudal society, for instance, behaved differently—all equities and claims can normally be sold at will, *irrespective of the purposes that the sums originally paid in may serve*—irrespectively also of the purposes any goods serve that may correspond to them—hence bought by means of short-term funds. Bonds, for instance, thus become a vehicle of the shifting of balances, which only technically and by degree differs from short-term instruments. As soon as this is realized, doubts arise about the very existence of a distinct thing to be called the long-term interest rate. The contractual rate on long-time instruments has, of course, a certain right to that name. But at the moment a contract is concluded this rate is simply a function of all the conditions of the money market—barring risks and chances incident to financing the particular proposition—which are expressed by the short rates. And as soon as the bonds have come into existence, it is their yield, again a function of short rates, that counts and not the contractual interest. Braving some danger of misunderstanding, we may hence go so far as to say that there exists no such thing as the long-term rate and that, if we nevertheless wish to use the concept, the thing we ought to mean is some kind of "trend value"[1] of short rates.

B. Discussion of Various Rates.—Information about the historical course of interest exists from very early times, even for the theocracies of antiquity. About the Graeco-Roman world we know much more. We know, for instance, what Roman *societates publicanorum* did to unfortunate *provinciales*, and have plenty of material about both legislation and practice. The point that strikes us first of all is the preponderance of lending for purposes of consumption. Whether protected or enslaved, the debtor is typically either an aristocratic scapegrace[2] or else a poor man submerged in misfortune. It is this aspect that legislators and jurists primarily thought of and that they transmitted to the Christian doctors and canonists—with all the more success because these found exactly the same aspect exclusively stressed by the Philosophus, *i.e.*, Aristotle. In other words, they and their medieval successors thought primarily of

[1] Lest this should seem to contradict a later statement, it is as well to point out that that term is here used in a nontechnical sense.

[2] In Rome, two distinct types are clearly discernible: politicians, whose career greatly depended on lavish expenditure on *circenses* and other things, G. Julius Caesar being the outstanding example for the huge element of risk that entered into lending to this type; and the young man of fashion, whose doings frightened the old gentlemen of the senate into passing the *senatus consultum Macedonianum* in order to avoid being killed by sons in desperate straits.

usury, and our theory lends, in fact, some support to their arguments. The discovery that debt may open up the road to wealth was not, however, deferred until modern times. The outstanding case of recognition of this truth is afforded by a contract that the Romans took from the Greeks, the *foenus nauticum*. This provided a method for the financing of maritime trade mainly by removing or relaxing the restrictions on the rate of interest in consideration of the clause that the "entrepreneur's" obligation as to both interest and capital lapsed in case his venture failed to succeed, *i.e.*, that he owed only if ship and cargo landed safely. If it be recalled that we allocate risk to the capitalist, it will be seen how perfectly this contract expresses the aspect that to us is the essential one.

Data become plentiful from the fourteenth century on, but material sufficient to derive time series is not available, so far as the writer knows, before the eighteenth century, during which we can follow the prices of the English consols. Except for this, serviceable series mostly start in the second quarter of the nineteenth century, although in important sections not before the second half.[1]

1. Success of factual investigation is in this field much interfered with also by circumstances other than mere insufficiency of material. First, even if we disregard the problem of the influence upon a given rate of interest which expectation of a rise or fall in the price level or in the rate of interest itself may have, it is impossible to isolate the element of risk and chance. The high rates which ruled in the Middle Ages, for instance, are largely attributable to the fact that, particularly in loans to princes, the lender had to consider the likelihood that he would not be repaid at all. It is impossible to tell how much would have remained of the 80 per cent that Frederick the Fair, the gallant king of Germany and duke of Austria (fourteenth century), is reported to have "paid," had the financial habits of that prince been more regular.[2] Cases of this kind abound at all times,

[1] See, however, the series beginning September 1795 of prices of 60-day bills on London at Boston and New York in Smith and Cole, Fluctuations, App. E. Their discount series (*ibid.*, Table 74) starts in 1831. The best (monthly) American series, the interest rate on 60 to 90-day commercial paper in New York, is in the writer's opinion the best in any country. It has been used by Professors Crum and Frickey, and the writer's work has been primarily based on it. For Germany, see Kahn, Die Geschichte des Zinsfusses in Deutschland seit 1815 (1894); Homburger, Die Entwicklung des Zinsfusses in Deutschland, 1870–1903 (1905); Albrecht, Die Geschichtliche Entwicklung des Zinsfusses in Deutschland, 1895–1908 (1910); and finally, Voye, Ueber die Hohe der verschiedenen Zinsarten (1902), who for Prussia covers the period from 1807 to 1900. Together, these authors tell a pretty complete story.

[2] This, by the way, should be borne in mind by historians who report on the sorry facts of usury. To the interest rates recorded correspond the records of the failures of financial houses that did that sort of business and were in many, if not most, cases bankrupted by it. On the other hand, we have seen that lenders reaped other advantages besides interest (Chap. VI).

and so do cases in which the lender, by hiding the actual interest behind some supplementary charge or concession, avoids quoting a figure that would shock public opinion. All this has an important consequence for the behavior of some of our series, which, moreover, change their character as time goes on. Ever since the English government, for instance, began to enjoy that confidence which it justified for so long a time, the price of consols varied much as we should expect in a safe—although in our sense never riskless[1]—annuity. But this was not so for the greater part of the eighteenth century, when we find consols varying, though not so strongly, in the same direction as stocks did. Similarly, even the highest class of American railroad and industrial bonds display the influence, in sections of our period, of a decreasing element of risk.

Moreover, regional differences are sometimes so important as to make it difficult to speak, even for one and the same type of loan, of *the* rate of interest in a country, while interregional and international capital movements interfere with the behavior of interest rates in any particular country. Again, taxation, fear of taxation, and the general attitude of public administration toward interest will all have effects which are not easy to discern, because they may assert themselves with lags and in very many forms, differently also for different kinds of titles. In cases in which placing of bonds is difficult and costly, or where intervention on the market is provided for, there is an element of remuneration for these services. Some rates are very slow in responding to changes of the situation. Others mean different things or have varying importance not only in different countries but also in the same country at different epochs. The American commercial paper rate is a conspicuous example.

Even if bankers' banks did no business except with member banks, it would not follow that there is only one rate in the Central Market. A central bank is a discriminating monopolist, although not a monopolist that aims at maximizing net revenue. For many purposes this can be neglected, however. Similarly, the Open Market evolves several rates which at times differ significantly but still present, normally at least, a picture so uniform as to warrant speaking of *the* open-market rate. The money market in our sense, however, splits into so many sectors and subsectors that no theoretical conviction to the effect that there is, after all, some meaning to the concept of a single rate of pure interest also in this market, avails against the fact that it is impossible to indicate it in a satisfactory manner. As we have seen above, we may schematize those sectors and subsectors according to types of borrowers—the German peasant, for example, had hardly any sources of balances to turn to other than saving banks, cooperative banks (Genossenschaftskassen of the

[1] The late Alfred Beit, the South African financier, used to say that he never lost so much on anything as he did on consols.

Raiffeisen kind), and village usurers; to German governments and municipalities any source was open—according to types of funds—certain household as well as institutional funds were even by law directed into certain channels; and large classes of savers habitually turn to certain kinds of investments and not to others—and according to types of title—from the standpoint of the issuing corporation, as from the standpoint of theory, stocks and bonds are fundamentally the same thing and yet, owing to the difference in the rights they embody, they suit different people and different situations. Markets of a higher order of specialization, in fact, develop around every issuing house or financial group as well as around every industry.

In briefly surveying some of the more important of these special markets and the interaction of the rates that rule in each of them, we will discard the market (which again splits into many subsections) of loans to households, except loans to "public households." As has been already mentioned, however, an element of lending to private households for purposes of consumption is included in agricultural credit. Also, we will not specially deal with that mass of credit that arises from the relations between manufacturers, wholesalers, retailers, and households, though not all of it is financed by banks. And we shall finally neglect the problem of regional differences.

2. Many authors, notably German ones, would look for *the* rate of interest ruling in a country (*landesüblicher Zinsfuss:* what a suggestion of traditionality, ominous for our purpose, this turn of phrase conveys!) to the interest charged on rural and urban mortgage loans. There can, however, be an approximation to truth in this view only in the case of first mortgages on urban realty. Other than first mortgages on urban realty are in many cases pure speculation. As to other than urban realty we must bear in mind, on the one hand, that in many countries habits of certain classes of savers, as well as legislation regulating investment of trustees' funds and investment by saving banks, favor this kind of credit, while, on the other hand, mortgages on farm land imply a special kind of risk, very deterrent to many people, *i.e.*, the risk of having to undertake the management of the farm or to find a manager for it. These facts go far toward setting up a special market displaying a special rate. In any case, we cannot look for a true representation of the cyclical behavior of *the* rate to those mortgage rates that are very sluggish from year to year, except in the case of the Kondratieff.

Of course, though some reservations are necessary owing to the organization[1] of this kind of credit, these rates do eventually follow the general

[1] This organization perfected to the utmost in Germany during the last 20 or 30 years of our period and even before that highly efficient, accounts, for example, for the fact that the rise in interest that begins in 1895 asserted itself but little in this market.

march of things. There are, moreover, two major links with other sectors of the money market. On the one hand, only part of the total amount of mortgage credit consists in balances that the lender intends to tie up for a long time. Other sources are available and, at some times and in certain countries, particularly in the United States, banks have gone much further in extending credit in those directions than principles of classic banking practice—and common sense—warrant, so that mortgage money coming from nonbanking sources often competes with the ordinary sources of credit provided by commercial banks.[1] On the other hand, mortgages may be "mobilized" like every other instrument of credit, and then they invade the bond market and establish connection with the latter's rate. The most perfect instance of this is the *Pfandbrief* of the German mortgage banks (*Hypothekenbanken*) or of cooperative credit institutions of the type of the *Landschaften*. The actual rate of interest for this kind of credit was not simply the rate which the borrower contracted to pay but that rate taken with reference to the price at which the bonds sold in the market[2] and also to the charge made by the institutions for their services. We have various series, especially since 1870,[3] which very clearly bring out the fact that at this point mortgage credit of the agricultural and urban kind merges into the general bond market. In view of what is to follow later, we may note that interest on "true" mortgages—distinguished from mortgages that only secure other types of credit—as reflected in the rate and yield of *Pfandbriefe* (the writer prefers not to translate the term) fell from 1870–1895 and then rose till 1914, although not very much. The Preussische Central-Bodenkredit-Aktiengesellschaft, for example, which offered its *Pfandbriefe* publicly, issued in the year of its foundation (1870) a 5 per cent type at par (which means 5¼ per cent for the borrower). In 1879 it financed on the basis of 4½ per cent at par, in 1884 at 4 per cent, in 1889 at nearly 3½ per cent. From 1890 to 1894 it had to return to the 4 per cent type. It reached the minimum in 1895, after which a slow and moderate rise set in (see Homburger, table on page 97).

3. The bond market is another semiindependent piece of the mechanism which we call the money market. The fences that, worn away in

[1] The reader will, however, recall that banks, when they lend for agricultural purposes other than current business or for urban building, do not always commit that mortal sin against the classic rules of banking which has so much to do with difficulties in depression. Besides, it has been mentioned already that mortgages may be no more than an additional security for an unexceptionable credit.

[2] This calculation presents various difficulties into which we cannot enter here. In particular, it would, in case the bonds are above par, be correct only if the whole premium went to the borrower, which in practice was not generally the case.

[3] See Hecht, Organisation des Bodenkredits in Deutschland, statistics of mortgage banking in Part II, vol. 1; also Homburger, cited before, p. 68, *et seq.*; for older data, see Von Cyriaci-Wantrup, Agrarkrisen und Stockungsspannen, p. 37.

many places but still recognizable, separate it from other sections consist not only of costs and risks but also of habits of investors and positions of borrowers. Their reality is proved by the fact that, in the short run, bond yields sometimes differ considerably not only from "short" but also from other "long" rates. But the bond market is also very liable to split into subsections—so much so that different issues of the same borrower occasionally display an individualism (see, for example, the different behavior during the 20 years before the war of the German government 3 and 3½ per cents) that is not always easy to explain.

One important subsection the individuality of which is accentuated by legal privileges of various kinds and by a strong, if sometimes uncritical, preference on the part of savers in some countries—particularly in France—is constituted by government bonds. In England and Germany, however, this market received a shock by the policy of conversions, which in part at least sprang from an erroneous diagnosis of the nature of the general fall in rates to 1897 and possibly also from an overestimation of immediate gain as against future disadvantage. In the United States, confidence in the currency established in 1879 or, practically, in 1878, was repeatedly shaken by soft-money agitation and free-silver campaigns, one of which is perhaps responsible for the small peak in yields that occurred in 1896, when the yield of the United States 4 per cents increased by ¼ per cent. But the policy entered upon in the late eighties of buying up, regardless of cost, influenced quotations much more strongly in the opposite direction. The fact that the yield of United States 4 per cents fell till 1901, unlike that of German governments which touched the low point in 1894 and that of English consols, which did so in 1897,[1] may possibly be explained by this, although other bonds did the same thing.[2]

[1] The high point in the London and Cambridge Economic Service Index of the prices of fixed interest securities, which, however, gives rise to various doubts, comes in 1896; the French *rente* reached its maximum in 1897.

[2] Mr. Macaulay's Index of American railroad bond yields (the "yield of best bonds each January") touches, however, its low point in 1899 (*Journal of the American Statistical Association* for March 1926. The reader should refer to this paper for questions of technique and some points of, comparatively speaking, detail). Moody's monthly series of corporation bond prices, 1866-1914, described in Moody's Investors' Service, November 1924, reaches a high, and the Standard Statistics Index of Yields upon 60 High Grade Bonds a low point, as late as 1902. The Treasury's policy of debt redemption beyond sinking fund requirements, so vigorously pursued, may in part account also for this, because a considerable fraction of the funds set free thereby would understandably seek investments similar in character. The movement, contrary to expectation, lasts, however, exactly as long as the sharp increase of investments by National Banks. Besides, debtor concerns certainly became better as a rule after the crisis of 1893 was over. There is no need, therefore, for concluding that, as the yield of governments behaved substantially as other bonds, we are faced with a true movement of "the long rate" asserting its independent existence and indicative of deep-seated causes in the sphere of "real capital."

All this need not detain us. The general contour stands out clearly. As to other than government bonds, the reader should, however, bear in mind that in this country the market of prewar days differed fundamentally from that of the twenties of this century in material, in public, and in financial structure. Railroad bonds were the big item. They and, still more, the bonds that the merger movement produced were primarily taken in large lots by institutional and wealthy private investors. The general public had not much to do with them, and Europe gradually sold out. In England, also, railway debentures were the most prominent "business" element of the bond market, which dealt mainly in local, municipal and quasi-municipal, and foreign loans. In Germany a market in industrial as distinguished from railway bonds, important enough to figure and to display regularities of its own, developed in the course of the eighties. Many factors, international influences, and changing quality or security or changing financial standing of debtors, among others, would have to be taken into account in order to explain the behavior of rates in this market and the changing relations between the rates ruling in its various sectors. For us, however, it is sufficient to complement our statements at the end of the preceding section with a few remarks on the mechanism which links bond yield to short money rates.

In prewar times, and particularly in London, speculators of a certain type—they were really a kind of *arbitrageur*—reacted promptly to very small variations in the relation between bond yields and short rates, and at once borrowed short in order to buy bonds when the margin covered cost and risk. In this country the negative short-time association between the loans and the investments of banks outside New York City, to be mentioned again in the next chapter, is indicative of another link. And the financing of subscriptions to bond issues by bank loans and the refunding of bank loans from the proceeds of bond issues provides a third. We readily see not only that this mechanism is by nature incapable of equalizing bond yield and short rates, owing to the particular kind of commitment incident to the legal construction of the claim embodied in a bond, but also that for reasons of financial technique it will be incapable of enforcing instantaneous, still less proportional, covariation. Even cases of variations in the opposite direction are by no means rare. For instances we need not look only to situations of deep depression, in which, when the panic is over, short rates may drop almost to vanishing point, while bond rates and bond yields stay up. It can happen in the most normal course of things that, for example, when a large issue has been negotiated and the borrower next lends the proceeds in the open market, bond yields rise and short rates fall for the time being. International relations, though we do not now take them into account, may be more effective in the one market than they are in the other. A

sufficiently widespread tendency among industrial borrowers to make themselves independent of their banks may occasionally raise the one and depress the other rate. It also should be clear, however, in what sense we may say that all this is "merely technical." In spite of it, the bond market is fundamentally but the most sluggish part of the money market, and in its rates reflects, though sometimes with a lag and always at a higher level and with smaller amplitudes, the fluctuations in short rates, which not only express business situations more faithfully because they are free to react instantaneously, but also are the main influence in shaping bond yields. The behavior of the two rates relatively to each other, in fact, bears out—although, by itself, it does not prove—the consequences that follow from this: it has for this country been shown by Professor W. M. Persons that the graph of bond yield, plus one-half of one per cent, looks strikingly like a "trend line" drawn through the graph of short rates.[1] Deviations from this evidently basic relation are distinctly secondary and can easily be accounted for.[2]

The problem of stock prices will be dealt with in the next chapter. Here it is sufficient to repeat that, according to the view taken in this book of the shareholders' position and of the nature of their dividends, the stock market is simply another section of the general market of balances. Since profit is for us the pillar of interest, dividends per cent of capital actually paid in, which bear a particularly close relation to profits, are really the most fundamental of all the rates of the money market. Broadly and on the average, they move in the same direction as bond yields (or rates on new bonds) and short rates. But the dominant influence of those risks and chances that are peculiar to common and, to a lesser degree, to all stock, impairs the working of the mechanism that

[1] Compare his study in the *Review of Economic Statistics* for April 1927, chart on pp. 94 and 95, see Chap. V, Sec. B, where this was given as an instance for a "reference trend." Crossing points roughly coincide with the inflection points of a smoothed curve of short rates and are—again, roughly—indicative of the Kitchin cycles. Otherwise they are not easy to interpret. There is, in particular, "not always a one-to-one correspondence between crossing points, on the one hand, and peaks and troughs (of the curves for four series of security prices) on the other hand"; nor is there any "pronounced tendency revealed for crossing points, on the one hand, and peaks and troughs, on the other hand, to occur simultaneously" (*op. cit.*, p. 101).

[2] See Dr. C. E. Thomas's paper, The Effect of the Depression upon Bond Yields; *Journal of the American Statistical Association*, September 1933. His result (though arrived at mainly from postwar material) that in an approximately normal situation a decrease of 1 per cent in the short rate would produce a decline of approximately 0.24 per cent in bond yields (p. 267) is as suggestive as is his emphasis on the influence of trade volume, any decline of which tends to counteract the influence of a fall in short rates and to reduce it practically to zero precisely in "deep" depression (p. 271). It is important to bear in mind that this does not contradict any of the statements in our text. Volume of Trade influences revenue, revenue influences the safety of the bondholder's investment (*op. cit.*, p. 262).

links this section of the market to the other two. Neither investors nor "borrowers" can choose between purchasing and issuing bonds or stocks according to actuarial rationality alone. And there is no simple and reliable relation between money rates and stock prices such as there is—barring risk of default—between money rates and bond prices. The primarily negative association between stock and (highest grade) bond prices, however, not only indicates that that mechanism is after all not absent, but also reveals the way in which the counteracting influences of variations in returns (dividends) and variations in pure interest work out in the course of cyclical situations.[1]

4. In one way or another, all the types of transactions in balances that we have so far discussed thus lead toward the Open Market. This is contrary to expectation, inasmuch as our schema has on its monetary side been made to center in the relation between member banks and their customers. We would, in fact, select for guide in our analysis the interest charged to customers in current account (Kontokorrent-Kredit, customer's line of credit), the true bank loan rate, if we could. From this, however, we are not only estopped by the impossibility of compiling a reliable series for prewar times, but also by those difficulties inherent in this material of which mention has been made above. This market is so far from perfect, charges differ so much not only locally but also as between banks,[2] customers and transactions, and are so sluggish, that tendencies can be read off much better from the series of the New York commercial paper rate[3] or, for England and Germany, from other open-market rates which in those countries more or less correspond to that American series. This choice is not satisfactory. The open market and its immediate vicinity, indeed, enjoy greater (almost absolute) freedom from those influences that make for stickiness and are almost perfectly competitive. But they, more than other sectors, are exposed to the regulative activity of central banks—degree and method of which greatly varied during the long period under discussion—and to the disruptive influence of the factor which, especially in England, it was the principal aim of that activity to control. This factor is the mass of

[1] *Cf.* W. M. Persons, Money Rates and Security Prices, *Review of Economic Statistics*, January 1926.

[2] In some countries, particularly in Germany, this situation produced the result that is so often the outcome of market imperfections: banks entered into agreements with each other (*Konditionenkartelle*) with a view to normalize charges. But this affects the last prewar decade only.

[3] To the published figure between ½ and 1 per cent should be added, in order to arrive at the rate actually paid by borrowers. The remuneration for the series of intermediate dealers is, in general, not comprised in published open-market rates. The relation between the rate on 60 to 90-day paper and 4 to 6 month paper is as we should expect, and does not call for comment.

temporarily unemployed balances and credit facilities, which in that market hunted "for any wretched rag of interest."

It is here that what we have called Temporary Investment puts in appearance. Funds which large concerns have accumulated for later acts of real investment or simply as a cash reserve or which they have on their hands when they are underspending in depression, or surplus funds of public or semipublic bodies, such as the Prussian state railroads and the Prussian government or India House, flowed, with increasing rationalization in the management of funds, increasingly into the open market for normally riskless and ideally short investment. In these cases, banks were frequently employed as agents. But they did a similar thing on their own account if their own credit facilities were underutilized in their own business and also in order to collect their secondary reserve (see Chap. XIII). They even, especially in England, shifted to the open market part of what otherwise would have been their normal business with their own customers: bill brokers (discount houses) looked after the acceptors of that part of their portfolio and relieved them of much trouble; this business was impersonal and restriction was normally possible at any moment without loss of either money or prestige and without remonstrances from irate customers; while firms such as the merchants of London and the great provincial centers were glad to offer their remittances in Lombard Street, seeing that as a rule they got lower rates from their broker than they would have from the very bank that financed that broker. This means, of course, that the amount of actual and potential balances offered in that market, while very variable, is extremely inelastic. No fall in rates discourages it; save in exceptional circumstances, such as obtain during speculative manias, it hardly increases in response to a rise except by way of immigration of foreign balances.[1] This, together with the perfect competition which rules in the open market, accounts for the frequency and the amplitude of variations in its rates, as well as for the close covariation of all of them.

All this undoubtedly deprives these variations of much of the significance they would otherwise have. It should be remembered, however, that this significance is not further reduced by the short-time character of the operations which those funds serve. For we know that this character is largely delusive: at least through financing the carrying of stock, even call loans are by no means debarred from financing such things as railroad building, while other forms of open-market credit much more directly serve the purpose of long-time real investment. Finally, we have to add to our list of reasons why rates of interest should lag behind other ele-

[1] More correctly and also more generally: by way of immigration into the banking circle under consideration; for large countries may so divide up into sectors that a rising rate may be effective in drawing floating funds from one to another.

ments in the cyclical process one more item that is peculiar to open-market rates, which are so remarkably free from the influence of others. As far as the balances floating in the open market have their source in underspending, they obviously cannot act on rates until restriction of industrial and commercial operations has occurred to a significant extent, that is to say, when liquidation has already turned into depression. Then the effect of decreasing borrowing is intensified by the increase in funds offered. The causal importance of this for the pulse of business is, however, small, as we shall presently see. And the location in time of the upper turning point in the money curve of the Harvard Index Chart is not as a rule explained by it. But the lag of the lower turning point in the interest series may be, for until the slack due to underspending is taken up, open-market rates cannot recover from their trough.

Call (broker's loans' renewal) rate and time rate do not differ more than we should expect from the smoothing effect the time arrangement must have. Commercial paper rate varies much as time rate, though at a somewhat higher level. No systematic change in the relation between the two seems to have occurred in this country or in Germany during the last 30 years before the war and not much in England, but there is in it a characteristic cyclical variation. We will, however, confine ourselves to a few comments on some of the instruments of credit that are mainly financed by open-market balances.

Treasury bills—we use this term for all perfectly negotiable short government obligations and for all countries—are, from the standpoint of the buyer, merely the senior members of the family of bankers' acceptances and move with the rest at a premium, which understandably widens in prosperities and shrinks in recessions. They may, for our purposes at least, be said to mean much the same thing in our three countries.[1] But bankers' acceptances, and therefore their rates, do not. They are first the typical instrument for the financing of current commodity transactions in international trade, and as such they have, up to the end of the seventies, primarily belonged to the English domain. It was not until the eighties that Germany increasingly took to financing her foreign trade herself. Something of that close relation to individual commodity transactions, at first so characteristic for this instrument of credit, was lost, even in England, in the case of the finance bills that used to serve, and still serve, in American export trade. But English practice substantially confined itself to this particular purpose and did not knowingly use finance bills for any other to a significant extent.

In America bankers' acceptances of this type, and a market for them, are a war and postwar growth. Before the war, accepting was even *ultra*

[1] The Austrian *Salinenscheine* afford the first European instance known to the writer of open-market operations undertaken by a government for purposes of regulation.

vires for National Banks. But in Germany bankers' acceptances were also used to a very large extent (much diminished after the war) for purposes of domestic trade and not only for that but even as a means of raising funds for real investment and of financing plant and equipment. Thus, the bankers' acceptance, which costs the bank nothing but its signature, became so popular as to acquire a central position in the market. A technique grew up for trading in these acceptances which made them ideally salable at a single rate by standardizing the "commodity" through certain requirements as to the standing of the accepting bank and as to form (round figures; observe the characteristically different attitude of English banks in this point). They were even directly used as means of payment. There is no perfect parallel to this in England or America, but the writer has come to the conclusion, in spite of considerable doubts, that this rate (*Privat-Diskont*) is the nearest equivalent to the New York commercial paper and the Lombard Street rates. The decreasing importance of the commercial bill must, however, be borne in mind: with English banks, for example, bills were 26 per cent of assets in 1880 and only 12 per cent in 1912.

5. Finally, it must be borne in mind that although in our schema bankers' banks and their rates stand "at one remove" from the money market, this was not so historically. Not until the Federal Reserve Act did any bankers' bank confine itself to bankers' bank business only. On the contrary, they all did member banks' business also—at times, primarily—and their central positions and bankers' bank policies gradually evolved from it. In the case of the New York banks, to which, nevertheless, we feel justified in attributing central bank functions, this precludes any search for a bank rate in the sense of our analysis. The Bank of England's rate was, in the times of the bill and the bank note, simply the rate at which it was prepared to do business precisely with nonbanking customers. This rate was highly inflexible (between 4 and 5 per cent) for over a century, until Peel's Act (except in the latter part of 1838). Then what was called the New System of Discounting was embarked upon. It consisted in competing for paper in the market and resulted for a time in a dominating position of the Bank in this business. Rate policy was currently adapted to that purpose, and although it would not be correct to say that the Bank merely followed the market—a buyer who acquires 50 per cent of any commodity can never be said merely to "follow," (see the next chapter)—its rate was certainly just one of the market rates.

Up to 1858 the Bank at least rediscounted for bill brokers and discount houses, thus doing typical bankers' bank business, which practically amounted to rediscounting for banks in the usual sense of the word[1]

[1] Bill brokers and discount houses, it should be recalled, are for us a special type of bankers or "satellites" of bankers. What is meant above is that the London banks which

and in effect overcame the It Is Not Done which obstructed the march of the latter to the Bank. But in that year rediscounting for the bill market was discontinued, and the Bank thenceforth entirely relied on its ability to attract the desired amount of paper competitively[1] until the early seventies, when this practice ceased to give satisfaction to the public. Until then bank rate, though as a rule on a higher level, would serve our purpose almost as well as market rate. But after some years of hesitation, the Bank then gave the strongest proof of its determination to cling to its member bank business. In 1878 it declared that it would no longer adhere to its official rate when discounting for its own customers but charge them about the market rate. At the same time, it made a move to retrace its steps in the matter of rediscounts by intimating its willingness to make special advances to bill brokers (discount houses), although rediscounting for them—at the official rate—was not resumed until 1890.[2] These two measures are highly significant precisely because they were taken together. They mark a new stage in the evolution of the Bank's policy: while it asserted its member interest, it simultaneously divorced this from its central bank function; bank rate ceased to be the hybrid that it had been until then, and began to assume the place assigned to it in our schema.

Similarly, the rate of the Prussian and later, the German Imperial Bank was primarily a discount and only secondarily a rediscount rate. Although the Bank was always under pressure from popular demands for a cheap and especially steady rate and at times had to yield to them, we may repeat for Germany, what has been said in the case of the Bank of England, that, for the nineteenth century at least, we could do almost as well with bank rate as with any market rate.

C. Discussion of the Time Shape of Interest Rate.—This discussion will primarily be based on the series presented in the pulse charts, which also show how interest behaves relative to other elements of the cyclical process (see also Chart XX). Call rate (Charts XXXVI and XXXVII), in its relation to stock exchange figures, will be briefly discussed in the

financed brokers were enabled to call their loans at will, since the latter could go to the Bank, and that this put them in much the same position as if they had discounted and then rediscounted themselves.

[1] Under conditions of imperfect competition that is, especially in England, entirely compatible with being dearer than one's competitors. In its provincial branches, however, the Bank discounted at the prevailing local rate and sometimes below it.

[2] Mr. King in History of the London Discount Market, p. 304, stresses the later rather than the earlier date and thus misses the essential complementarity of those two measures. He even (p. 297 *n.*) accuses Palgrave of inaccuracy in holding that the policy of 1858 was reversed in 1878. But Palgrave does not seem to assert much more than Mr. King admits. The difference seems to arise from an inclination of Mr. King to underline the achievements of William Lidderdale very strongly. His own interpretation of the resumption of rediscounting is not, however, impaired thereby.

next chapter. From the outset it must be borne in mind that the rates chosen, although comparatively "pure," still display the influences of legislative changes, currency and credit policies, gold production, international relations, and in particular of panics—all of which unavoidably interfere with expected behavior and with such barometric value as the rate of interest may be held to have. But a barometer that can be spoiled is still a barometer, and in large intervals within our period some of these influences—though not that of panics, which acted on interest much more strongly than they did after the World War—were not very important.

1. Since we do not use indices of rates, interest series are natural. Of course, they are systematic—in fact, they may justly be called the most systematic of all. There cannot be any doubt that what they describe is a primary element of the cyclical process of evolution, though not all economists will agree to the statement that follows from our analysis, *viz.*, that interest is fundamentally consequential, and is causal only in a secondary sense. Deferring additional comment on the latter point, we note that, similarly, everybody will accept the proposition that interest is the most cyclical of all the elements of the system; but hardly anybody the further proposition that it makes a "clean" cyclical series. Improvement of the organization of credit, decreasing premia for risk, and other such circumstances may account for a falling descriptive trend in interest series, but our theory denies that there is any result trend. While in the pure model interest would in each cycle start from and return to zero, there is no generally valid reason why it should not in actual fact come as near to it in any neighborhood of equilibrium—account being taken of the phases of underlying cycles—as it does in any other.[1]

Data good enough to test that proposition under comparable conditions over a sufficiently extended period do not and cannot exist. But such information as we have about centers of capitalist evolution anterior to our period is corroboratory rather than otherwise. In Amsterdam, market rate in the eighteenth century—even in the seventeenth—was sometimes as low as 2 per cent.[2] However hazardous the comparison—

[1] There might be a special reason, however, incident to the factor of consumers' borrowing: the influence of bourgeois mentality which had created a parsimonious state, being displaced by the influence of another mentality, making for an extravagant state, may produce a noncyclical rise in interest in the future or, as an alternative, currency disorders. Such conditions actually did prevail before the reign of the *bourgeoisie* and so did the consequence envisaged, while the opposite consequence actually ensued as those conditions passed. There may also be spurious reasons: as pointed out in the text, modern technique does not allow interest to soar to panic peaks.

[2] Even in the England of Walpole and Pelham, 3 per cent consols—the price of which we could not, however, for reasons stated in Sec. B, take as a reliable guide—occasionally sold at prices higher than any they ever reached afterward (maximum, 107), see W. St. Jevons's chart in his volume on Currency and Finance.

in actual fact, minima cannot always be taken to indicate neighborhoods of equilibrium, see *infra*—it is not without significance that in 1897 London market rate was about as high (average for that year, 1 pound, 18 shillings, 6 pence). And again the question seems in order as to how much the reader thinks would have been left, in either case, of those 2 per cent if there had been no consumers' borrowing. Moreover, inspecting the graph of our series of New York commercial paper rates from 1875 to 1914, we find that it fluctuates about what in a first approximation seems to be a perfectly even level. In fact, it looks as if a trend had been taken out of it which may, however short the series, be adduced in favor of our thesis, because it is obviously not likely that if a systematic tendency to fall were present in interest rates, this tendency would not have shown at all within 40 years of both vigorous and relatively undisturbed capitalist evolution.[1] It should be observed in passing that these facts, by refusing support to the so-called Law of the Declining Rate of Interest or, as the classics said, Profits, indirectly also cast doubt on the theories of which that law is a consequence. Nor should we be surprised at this. There is nothing in theory or fact to justify belief in any tendency in the recurrent waves of profit (in our sense) either to increase or to decrease systematically. It follows that interest fundamentally deriving from profit should also not display such a tendency.

2. The reader will readily see that expectation as to the cyclical behavior of interest, if we adapt it to the higher approximations of our model, including the coexistence of three cyclical movements, will be for a lagged rise in prosperity and a similarly lagged fall in recession.[2] Since the neighborhood value of interest rate is not actually zero, further fall will, in general, occur in depression as a consequence of abnormal restriction of volume of business. But as in all other cases, it must be remembered that the processes of depression are erratic, even apart from the effects of panics on the rate of interest which are peculiar to it. Uncertainty extends, in consequence, to its behavior in revival, which should bring it back to neighborhood value. Again it must be emphasized that these expectations will work out somewhat differently in cycles of different span.

[1] Mr. Carl Snyder, Interest Rate and Business Cycle, *American Economic Review*, December 1925, p. 697, notes that "it is striking how often this peak [of cyclical expansion as measured by the Clearings Index of the Federal Reserve Bank of New York] has come close to the time at which the interest rate has risen to just above the average of the half century, *i.e.*, when the interest rate crosses the average line" (which is at 4.93 per cent, 1875 to 1925). This, again, could not be if there had been a significant trend.

[2] The writer has sometimes heard and read the statement that the fluctuations of credit lag behind fluctuations in business activity. This is not the same thing—and not quite correct—although it is obvious that the statement means the same thing, *i.e.*, that *interest* **lags**: other elements of the sphere of money and credit do not.

On the whole, this is what we find. Owing to the abnormal sensitiveness of our series and to the fact that short money rates reflect, and are connected with, everything that happens in the business world from day to day, surface movements are much more, and underlying movements correspondingly less, accentuated than in a series of employment or pig-iron consumption. We therefore find that the graph, while it displays many other surface movements also, is dominated by the Kitchin wave, presence of which is obvious at the first glance. Interest rate is, in fact, the standard instance by which to demonstrate this cycle and has been repeatedly analyzed with a view to measuring it. For us it is sufficient to refer again to Professor Crum's periodogram analysis of the New York commercial paper rate series (*Review of Economic Statistics*, 1923) which has been several times quoted in this book, and to point out that the phenomenon can readily be seen also in the English and the German series. Nevertheless, as has been emphasized by Professor Crum and as is proved by the fact alone that different authors have invariably derived somewhat different periods, the results of formal analysis are not, in themselves, entirely convincing. They cannot be expected to be so with material that is subject to so many internal and external irregularities (see Chap. IV, Sec. D). No one with the slightest familiarity with business responses can ever hope to "prove" this or any other cycle from time-series evidence alone, since this would require that periods, amplitudes, and behavior in phases be entirely unaffected by any external factors and always the same in war and in peace, in times of increasing and in times of decreasing gold production, in times of sound money and in times of actual or threatened disorders. Still, such short and such strong fluctuations, which also are, comparatively speaking, so regular, afford an exceptionally favorable case. We cannot hope for equally good results with regard to any much longer ones. Formal methods would hardly yield results in the case of the Juglar, and if formal measurement be insisted on, it is easy to deny its existence. But if the reader follows our series year by year, starting with the characteristic rise in 1879, he will be able to mark off the last two Juglars of the second, and the first two of the third Kondratieff. Some well-marked troughs are a help—*e.g.*, 1885, 1894, and 1904 (1908 requires careful interpretation)—but those peaks which are immediately followed by abrupt fall of over 3 per cent should be neglected. Of course, in this case, as in all others, conviction can be attained only through a knowledge of what actually happened, strictly speaking from year to year, in the industrial organism. Chapters VI and VII seem, however, to provide all that is necessary for a first attempt.

In the series of commercial paper rates and its equivalents in England and Germany, the Kondratieff should show in what traditional analysis

would describe as breaks in trend—as it does in other series that cover about the same stretch of time. Stating the question is answering it. Everyone knows that rates displayed a long-time tendency to fall until the middle nineties, when an opposite tendency began to assert itself, although in the United States—not so, as we have seen, in Germany and England—bond yield failed to follow suit for some years. It is possible to draw a plausible declining "trend" through the New York figures from the beginning of the series to 1897—the minimum occurs in 1894—and a not less plausible rising one through the figures for 1897 to 1913. The same can be done for England—where the minimum in market rate occurs in 1895—and Germany. This means that we have only a slight and very short recovery rise, which, however, is for the same reason as in the case of price level not astonishing in a Kondratieff, the long and gentle sweep of which is little influenced by spirals. We may go farther back, although on decreasingly satisfactory material. The rise in yields of English consols toward the end of the eighteenth century does not, as the rise in price level, precede the French wars, but coincides with their beginning. The all-time peak of 1798 could be sufficiently explained by those wars and inflation alone. The wars also explain the fall of Prussian governments, which yielded over 16 per cent as late as 1813. This casts doubt on such evidence as we have about interest rates from 1787 to 1815 at least, but after the latter year we are entitled to speak of a tendency of interest to fall for a period much too long to be accounted for merely by the process of absorption of war effects, some of which moreover would have tended to raise rates.

That period lasts in England and Germany to between 1842 and 1845. For this country disorders of the wildcat banking type and cheap-money policies explain violent upward spurts in the thirties (1834, 1836 to the beginning of 1842; see Cole and Smith, *op. cit.*, table on pp. 192 and 193) which blur the picture: rise indicative of the processes of a Kondratieff prosperity here begins in 1845. So it seems to have been also in Germany, and this is a more serious deviation from expectation, since it cannot be accounted for by equally significant disorders in the sphere of credit during the late thirties. For 1844 (see Kahn, *op. cit.*, and Voye, *op. cit.*) bond yield, mortgage interest, and the rate of discount of the Prussian Bank were all at a minimum of respectively 3½, 4, and 3½ per cent. A significant rise begins in 1845, which clearly links up with the Kondratieff processes of the forties—railroads, in particular. But it lasts until about 1870, when yields of first-class fixed interest securities were about 5 per cent. We might question the evidence. Requirements of war finance and the speculative excesses of the fourth Juglar could well be held responsible for what, from our standpoint certainly, is an irregularity, and there were significant relapses. Since this irregularity is, however, parallel to the one observed in the behavior of price level, it is

reasonable to connect it with the effect on demand for balances that a rising price level would have. The course of events in 1870 was dominated by the Franco-German War, and during the next three years interest rates fluctuated under the influence of the mania of promotions[1] and the indemnity. The picture is somewhat distorted by the policy of the Prussian Bank, which in the second half of 1872 resorted to restriction of credit rather than to an "adapted" increase in rate. After the crisis, both short rates and yields return to form.

English rates illustrate our mechanism to perfection. We will glance at the market rate for high-class bills. It promptly rises at the beginning of the forties, obviously in response to railway building, and before there was any rise in price level. The year 1846 displays the Juglar peak (the annual average for 1847 is still higher—5 pounds, 17 shillings, 6 pence[2]—but this was a panic peak) followed by the lagged decline to the second half of 1850 (average for the year, 2 pounds, 5 shillings). Then, with the second Juglar rising and the Kondratieff prosperity going on, the rate again rises—with a setback in 1852 indicative of the presence of a counteracting force, gold inflow—to a peak higher than that of the first Juglar in 1856 (5 pounds, 10 shillings, the figure for 1857 is again higher, 6 pounds, 15 shillings, but still more obviously due to a panic), which marks the culmination of the Kondratieff very well—no such annual average occurring again within the period except in the financial panics of 1864 and 1866. Disregarding these and also the intervening year, we have a falling tendency throughout recession and depression and only a little upturn, as stated above, at the end of revival (from 19 shillings, 2 pence in 1895 to 1 pound 18 shillings, 6 pence in 1897). Within this movement, Juglars show very well—rise in 1860 and 1861; then a normal fall to 1868, interrupted by and resumed after 1863 to 1866; rise again from 1869 through a setback to the Juglar peak of 1872 (4 pounds, 1 shilling, 9 pence, 1873 again displaying the influence of the panic in its annual average of 4 pounds, 14 shillings); fall to 1876; recovery rise 1877, and some panic influence in 1878; after reaction to this, a rise in 1880, 1881, and 1882; fall to 1886; no substantial change until the lagged rise in the prosperity of the last Juglar (in 1889); a Juglar peak in 1890 (average 3 pounds, 17 shillings, 7 pence); then the fall (some panic effect in 1893, however) and the recovery mentioned above. Yield of consols tells in this period about the same tale.

The reader will have observed that some figures have been discarded as panic peaks, others as setbacks, a procedure which of course stands and falls with its historical warrant for each case. But he will also

[1] We recall that from 1871 to 1873 there were 928 flotations with a capital of 2,781 million marks. The states, however, repaid debts. The Reich even bought fixed interest securities as an investment.

[2] See Palgrave, *op. cit.*, p. 33.

observe that, if due attention be paid to the interference of the three cycles with each other and to the influence of wars, panics, and monetary disorders, little remains to be accounted for by factors other than those that make up our cyclical mechanism, and that, in particular, the behavior of rates within each phase of each cycle is substantially according to expectation. This is all the more significant because of the variations in gold production that occurred in the period. As a matter of fact, we have seen that they did assert themselves. But neither their short-run effect in depressing rates nor their long-time effect in raising them was strong enough to prevail over the cyclical movements. No country was, taking the period as a whole—Californian gold, of course, acted primarily on the United States—so directly exposed to the impact of new gold as was England. Nowhere can actual short-run effects be so easily followed up. Yet interest behaved in no other country so nearly according to theory as it did in England.

3. It is—for prewar times—not possible, but it is fortunately not necessary, to prove fully the statistical relation between interest and profits, which, since our analysis makes the latter the dominant factor in the variations of the former, should be particularly close under any normal circumstances. As far as we may, however, trust the testimony of the German dividend series (see Chart XXXVIII), it is in fact, very close: American figures about dividends declared give the same impression; so do railroad earnings. In comparisons with other series, the extreme emphasis that the interest rate places upon short-time surface fluctuations in business—this is, as has been pointed out, the only difference between its cyclical behavior and that of employment; see Chart XX—and result trends must be taken into account. The lag in interest rate, although it does not always show significantly and although it is in many cases difficult to identify among all those erratic elements which make sequences in our material so unreliable, must also be borne in mind. With these provisos, we can say that interest goes well with pig-iron production or unfilled orders of the United States Steel Corporation, and that, in the two longer cycles, particularly in the Kondratieff, it displays the relation to total output which we expect on the theory: the long periods of falling interest rate are also the periods of strongest increase in total output. The relation is predominantly positive in the Kitchins as they appear, if a least-square trend be eliminated from the output series. The short-run relation of interest to building is inconclusive. Interest is positively correlated with outside clearings, outside loans, and outside deposits in prosperity and depression, also—though less so—in revival, but negatively in recession. Since the latter fact is the main reason why there is a trend in these series, trend elimination will again produce lagged covariation in all phases.

The reader will have observed that the expectations which our model yields for the behavior of interest are, with two exceptions, almost exactly the same as the expectations for the behavior of price level. One of those exceptions is the lag, which, however, is important only for short fluctuations. The other is the downward trend in prices. But barring these there should be all but exact covariation, because even external disturbances and the internal irregularities—these with the exception of the panic peaks in interest—are in most cases likely to affect price level and interest in the same sense. This is in fact what we find, and not less in the long than in the short run: a glance on the pulse charts will satisfy the reader that this relation is not less in evidence in the Kondratieff than in the Kitchin and that it persists in the most varied constellations of external factors.[1] For the period from 1886 to 1925 it has been the subject of Mr. Zinn's most interesting study, previously quoted,[2] which yields the conclusion that neither variable can be considered the fundamental "driving force," but that both "presumably fluctuate in response to an unknown common set of generative causes, active at the root of the system," and that "the interest rate at any time is related in a systematic manner to the preceeding values of wholesale prices, as well as to the concurrent values."

The mere fact, however, that price level and interest rate are only two of very many—or of several aggregative—variables suffices to prove that the deviations from strict covariation of the two must have other than random causes. In particular, the strong inverse relation that exists between the short fluctuations of deposits devided by price level and the short fluctuations of rate of interest, both taken with reference to their Kondratieff movements, suggests that there are systematic reasons for such imperfections of that covariation as we observe,[3] and the above analysis but leads to the door of more intricate problems.

[1] *Cf.* Mr. Keynes' Treatise on Money, vol II, Chap. 30 VIII: the Gibson Paradox. He rightly calls it "one of the most completely established facts within the whole field of quantitative economics though theoretical economists have mostly ignored it" which "ought to be susceptible of some explanation of a general character." The reason why such explanation is not to be found in the cyclical covariation of prices and interest is (p. 201) that it is a long-period "rather than a strictly short-period phenomenon." But the long-period covariation envisaged by Mr. Keynes is simply the covariation in the Kondratieff cycle. From our standpoint, we had better speak of a Gibson Katadox.

[2] *Review of Economic Statistics*, October 1927, especially, pp. 189–197. That period has been divided into three subperiods—1886–1899, 1899–1912, 1912–1925—accidentally covering almost exactly different Kondratieff phases. The correlation between the factors expressing the interest-price relation in each of them ("system factors," as Mr. Zinn suggestively calls them) is as high as 0.82 for the first subperiod and the two others, and 0.90 for the second and third subperiods.

[3] That idea, the result, and the method by which it was attained, entirely belong to Dr. C. E. Thomas.

4. Within a system of interdependent quantities there is no point in trying to label some as determining and others as determined. Within a definite process, however, which runs its course in the system there is point in asking what is the particular role of every element in the sequence of events. In this sense we call interest consequential because it is, within our process, moved away from its neighborhood value by the entrepreneurial demand for balances and does not by its own behavior cyclically disrupt that neighborhood. This proposition follows from the analysis in Chaps. III and IV and cannot be disproved by a *post hoc, ergo propter hoc* argument exclusively based on the fact that prosperities are invariably preceded by moderate rates of interest. But it is necessary to safeguard it against another line of reasoning—one that we have met before and that is primarily associated with Professor von Hayek's famous book Prices and Production.[1] We assume perfect equilibrium of perfect competition—coexisting, however, with a positive rate of interest[2]—to start with.

Then there will be, as our own model shows, unused facilities for the creation of balances. Every bank has, in a perfectly competitive member bank system, a prima-facie motive to make use of them. This will reduce the rate of interest below its neighborhood value—the real or natural rate in the sense of that group of authors—hence, increase the value of all durable goods,[3] the production of which will therefore, absolutely and relatively to that of transient goods, expand in response to this stimulus and turn out to be untenable as soon as the latter is removed, *i.e.*, as soon as money rate again equals the "real" rate of interest—the implication being that this is bound to happen when the banks run up against the technical limit of their power to create balances. This reasoning seems to give a rational schema of cyclical movements, the motive force for which is entirely supplied by the initiating action of banks. It will be shown in the next chapter *why* it is not likely that banks, even if they work perfectly competitively, would take that initiative which is by this theory held to disrupt the existing state of equilibrium. But *that* no

[1] We are here interested in only one aspect of that theory, though a fundamental one, and we do not intend to discuss it as a whole. For the sake of argument full employment of resources at the outset is taken for granted. On other points see Hansen and Tout, Annual Survey of Business Cycle Theory, *Econometrica*, April 1933. The argument we are going to discuss also underlies Professor von Mises' and Mr. Hawtrey's theories of the cycle and goes back to Wicksell.

[2] This assumption is also granted for argument's sake. If the writer's theory of interest be accepted, the problem we are about to discuss does not arise at all.

[3] This formulation, somewhat more general than the usual one, is due to Professor Machlup, who has also in a very telling way stressed the difference in the effects which variations of interest exert on cost of current production and cost of long-time investment (*cf.* Interest as Cost and Capitalization Factor, *American Economic Review*, September 1935).

such initiative can as a matter of fact be the prime mover of the cyclical deviations from equilibrium is obvious because, though interest may only rise with a lag, it certainly does not fall in prosperity, or at its beginning. This would, however, be necessary in order to produce the above effect on the system of commodity values. It cannot be replied that equilibrium rate must be defined with reference to the demand schedule for balances and that, hence, if that schedule shifts upward, as it does in prosperity right from the start, money rate may be "too low" or even, relatively to the data of the situation, "falling," even if it actually rises. For first, that shift would take precedence, logically as well as in time, over any initiative of banks—which, in fact, would as an element of explanation be rendered superfluous by it—and would have to be explained independently, either by the action of external factors or by innovation. And second, for old firms the demand schedule for balances is shifted only by the effects of entrepreneurial expenditure: hence, any expansion of their productive apparatus, *i.e.*, expansion along old production functions, could, *independently of that expenditure*, occur only if interest fell *absolutely*, which it does not. It should be added that production along the new production functions has nothing to fear from a future rise in interest, since it is protected by the buffer of profit and since, moreover, it so upsets previous conditions that it is by no means certain that time preference—the real rate in the sense of these authors—will remain what it had been. It is much more likely to fall.

But if we thus see that this theory fails to give satisfaction as a fundamental explanation, we also see that it correctly describes a large expanse of fact—as has been pointed out repeatedly in the course of our historical sketch. We do not, of course, hold that the behavior of banks has nothing to do with the cycle. There is no doubt that without credit creation amplitudes of cyclical fluctuations would be much smaller, although there have been (witness England in the forties) even "manias" with very little credit creation, and although the effect on money rates is not the most important lever through which it works. In particular, the phenomena of the secondary wave would then be much less in evidence. Although even these are induced not by money rates being too low but by entrepreneurial activity, higher money rates would go far toward keeping them in bounds and low money rates tend to foster them. Judgment in granting loans is much more important than the rate charged, and reckless banking does not consist in financing cheaply but in financing irresponsibly. But effects would be mitigated if, given a certain amount of irresponsibility, credit were made more expensive.

What should be evident more than anything else is that a cheap money policy in prosperity can have no other effect than to accentuate excesses and subsequent breakdowns. We define it with reference to the

concept of Adapted Rate introduced in Sec. A. This rate, it will be remembered, is not an equilibrating rate and does not prevent the system from drawing further away from the preceding neighborhood, although it does not cause its excursion. Cheap money policy, being the attempt to keep actual rates below it, unavoidably imparts an impulse in that direction. A dear money policy, analogously defined, would no doubt also be effective and exert equilibrating influence. But in neither case can effects be expected to be as great as the usual two-variable analysis would have us to believe, for other things cannot be equal under the circumstances. Going on in the cyclical sequence we notice that the primary factors which bring about the upper turning point are independent of the rise in rates that has previously occurred. In this sense we may say that interest no more causes the down turn than it causes the excursion of the system into prosperity. Navigation becomes, however, difficult beyond this proposition. To facilitate it we will at first disregard the "lag" and assume that rates move synchronously with the other relevant elements of the system. Then the rate will move *pari passu* with the incipient self-deflation of business. But, even so, it will press with different severity on different sectors of the system and certainly be one of the factors to make the operations of the Secondary Wave, or some of them, unprofitable. And cheap money policy would be as effective to counteract this as action on any single, though important, element can be.[1] The argument is at first sight much strengthened by the fact, first inserted into our model in Chap. IV, that important lines of expenditure, some types of dwelling-house building, in particular —but many adaptations to the things that newly emerged in the preceding prosperity and a great part of the conquest of the new economic space come under the same heading—are actually highly sensitive to variations in interest alone, which therefore here acquires, as any other element can more or less, a "secondarily causal" role. But as our study of time series has shown, interest actually does fall, by virtue of the working of the cyclical mechanism, fully as much as, and more than, is necessary to keep up system expenditure, since those lines of expenditure do, in fact, expand in recession. The case for accentuating this effect—in practice it mostly rests on a failure to distinguish between the processes of recession and the processes of depression—would therefore have to rest on individual circumstances, and also have to be strong enough to overcome the objection to keeping alive those operations of the Secondary Wave and to preventing the liquidation of maladjustments.[2]

[1] In formulating as above, we follow the fashion in assuming that the effect of falling interest on the consumers' expenditure of the strata affected is negligible. This is, however, not necessarily so.

[2] Lest to some readers this should seem an unpleasant result, the writer begs to point out that his argument can be made to imply the necessity of much more control, regulation,

No such objections to cheap money arguments apply in depression phases. But when the "crisis," if any, is over, interest does fall as a rule very considerably and sometimes precipitately. There is no better example by which to demonstrate how little the rate of interest can by itself do than the typical course of events in depressions. With more, though still little, justification could it be argued that there are junctures at which its increase by authoritative action would be more effective in stimulating business, because it would call forth some demand for balances, which holds back in expectation of further fall. We need not turn to our model in order to elaborate the point. All we have to do is to invoke common business experience which, but for the phraseology that has developed, would be enough to establish the truth that tampering with the rate of interest in depression is but a piece of political liturgy. It follows that, however promptly interest falls, it would not on that account become a major factor in bringing about the lower turning point in business. This is independent of, but much strengthened by, the fact that revival is, at least at first, typically a revival in current business but not in investment, and in the cost of current transaction even zero interest would as a rule mean much less than a moderate reduction in wages. As revival wears on, however, interest resumes the "secondarily causal" role it loses in depression, and cheap money policies would become effective again. But as we may infer from theoretical considerations, and as we can see statistically and historically, interest does not and cannot rise quickly and considerably in conditions of *both* liquidity and good business prospects. As far as it does rise, this rise fills an obvious function: the effect of cheap money policy can in these conditions only be a Hayek effect.

We have now to insert the Lag, remembering that what is usually thus referred to is a composite of many different elements, some of which are not genuine lags at all, since interest holds place behind other elements in the cyclical sequence. The cases of the lag in short rates and of any lag there is in bond yields behind short rates must be distinguished. Very little friction, if any, enters into the first. But any failure of short rates to rise promptly in prosperity, however caused, must tend to intensify its primary and secondary processes—especially the latter[1]—and induce a great many operations that will lead into difficulties later. A lag in and after the upper turning point has the effect that, with business deflating

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investigation into the details of each case than any simple recommendation of cheap money policy, hence enough of public activity and bureaucracy to gladden their hearts. See next Chap. Sec. A.

[1] It should be observed that this lag is also due to the institution of credit creation: if prosperity were exclusively financed by savings, rate of interest would not only rise more but also more promptly.

itself, a moment comes in which the adapted rate equals the equilibrating rate and after which it acts punitively, in strict theory, for the rest of the recession. Though this effect presupposes and does not cause recession, it yet intensifies it. But it should be observed that we have not the same reason to expect a lag in the turning point and in recession as we have to expect one in prosperity. If such lag as there is asserts itself in the shorter cycles—the case of the Kondratieff is doubtful—about equally in all phases, this must be accounted for somewhat differently in each of them. The main factor in recession is not risk, still less borrowing in order to cover deficits, but the new demand which replaces that of the entrepreneurs, partly at once and partly—later on—when the rate has already begun to fall. It follows that that punitive effect is not of a nature to cause general disturbances, although it does increase the difficulties of the typical Old Firm. In particular, no such *general* punitive effect should be inferred from a lag of short rates as against prices. For, as we know, falling prices are compatible with flourishing business. In depression unemployed balances ride their attack on interest rate, and any lag in this phase can be due only to the element of risk. With decreasing risk, the weight of those balances which must first melt before the rate can recover also accounts for the fact that is particularly in evidence during Kondratieff prosperities and more than anything else responsible for so many people's unshakable belief in the efficacy of a low rate of interest, *viz.*, that the lower turning point of the shorter cycles so frequently occurs when the rate of interest is still falling. Since it is business activity that pulls it up, we shall not wonder at it. About the causal importance of this favorable factor it is not necessary to add anything to what has been said above.

The lag in bond yields as against short rates is not a regular phenomenon at all. This apart, it differs from the lag that has just been discussed, in that friction plays a considerable part in it; and it can be best observed, on the one hand, in the upgrade of the current Kondratieff in this country and, on the other hand, frequently in deep depression after the panic, if any, has passed. But the first instance, like others that could be cited, is to be explained on special grounds that have nothing to do with the working of our mechanism. The latter instances have received more than their due share of attention. These cases owe their existence to the fact that in the atmosphere of such a situation, with the causation of which interest has little to do, neither borrowers nor lenders care to do any business at any rate whatsoever, and that the price of existing bonds is kept down by the knowledge that the sources which service them are being increasingly impaired. In general, short-time covariation of yields and short rates is instantaneous.

CHAPTER XIII

The Central Market and the Stock Exchange

A. Banks and the Pulse of Industry.—Turning to questions concerning the way in which financial facilities are provided for the purposes of providing financial facilities, accommodation for providing accommodation, we move still further away from the motor forces of our process. In doing so, we shall continue to use the general schema of the sphere of banking which has been sketched out at an earlier stage as an instrument that will help us to interpret the actual working of the banking systems of our three countries. We have also at various turns of our way had enough glimpses of how they actually function to enable us to piece together a serviceable picture. Those traits which are most relevant to our present purpose may be summed up and somewhat amplified as follows.

In the period under discussion the institutional pattern of banking systems (quality of their personnel and their traditions included) underwent considerable changes, even since Peel's act in England, the foundation of the Reichsbank in Germany, and the establishment of the National Banking System in the United States. But most—though not all—of them were in effect, whatever the intention may have been, nothing but adaptations to the situations created by our process and in fact part of the latter. Such general propositions about the whole period as we are forced to make should, hence, be reformulated for each of the historical subdivisions, which in strictness ought to be dealt with individually.

1. The individual member bank may be so big as to be able to influence by its own action price level and money rates, either by the mechanical effect of its operations or by its example. The member bank business of the Bank of England is an outstanding case for about 1845–1870. In the last three or four decades of our period the great English and German concerns, toward the end of it also the New York group which was dubbed Money Trust, afford other instances. Whether a bank holds such a position or not, however, it finds itself hedged in, not only by familiar conditions which, though elastic in the long run, yet technically limit

the sum total of balances it can put at the disposal of its customers at any given point of time,[1] but also by the fact that it cannot normally take the initiative in lending or even, without taking the initiative, allow loans mechanically to expand to that limit. This simple fact is so much covered by the embers of ancient and recent controversy and so liable to being misunderstood that we must explain our meaning with some care, even at the risk of repetition. We will first speak of member banks' business with their customers, then of their operations in the open market, and finally, of a particular aspect of the investment item.

When nearly a century ago, in the controversy on the principles of banking that centered around Peel's legislation, Fullarton held the view which was put forth again and again, before as well as after, by writers representing the views of the banking world—namely, that banks cannot "force their money upon people"—he laid himself open to the rather obvious reply that they have a strong motive (in perfect competition, at least) to use their facilities to the full and that, hence, they will so frame their conditions as to call forth the corresponding demand. This reply fails to do justice to what Fullarton really meant and but repeats the very error that he probably wished to point out, *viz.*, the error implied in the application to banks of the general schema of business behavior. Any other manufacturer simply wishes to sell the quantity of product which will yield the maximum net revenue and does not bother about what happens to the units after he has sold them. The manufacturer of balances who wants "his money" back, cannot for this and other reasons behave according to the same schema. For him other considerations enter into every transaction with every customer and make of it an individual case, which cannot be dealt with in the same way as the sale of a pair of boots. Moreover, every one of these individual cases is, on the one hand, an element of his relation to the customer which must be viewed as a whole, and on the other hand, an element in his total position which, also, must be watched as a whole. This forces upon him an attitude of reserve, which is entirely absent from the behavior of any other businessman. To be sure, this attitude is not always observed. We have met examples in our historical report. The fact that often it is not observed is the very reason why there was also plenty of practical wisdom in the teaching of the so-called currency school (Lord Overstone) which Fullarton fought, and which in turn fought his teaching, according to the approved method of economists, which consists in never meeting

[1] This distinction between the limits set at any time to the expansion of the deposits of all the member banks taken together and to the expansion of the deposits of any single bank is part of traditional teaching and, hence, need not be elaborated. It should, however, be recalled that traditional doctrine stresses inadequately, first, the elasticity of those limits, and second, the fact that since individual banks expand and contract together, the limits set to the expansion of an individual bank lose much of their importance.

one's opponent's point. Nevertheless, that attitude is an essential part of the logic of a banker's situation. And it follows that, while most shopkeepers will normally congratulate themselves whenever they are "sold out," the banker does not typically aim at being, and does not congratulate himself if he is, "loaned up." On the contrary, this means for him an exceptional and undesirable situation of embarrassment and of danger, which is, as a matter of practice, always recognized to mean that, both by the individual banker himself and by the banking community. Customers' business cannot be handled safely and comfortably unless each bank has a generous allowance of unutilized lending power. Full utilization of that lending power in member banks' business with their industrial and commercial customers is, hence, no equilibrium condition—nor is it an "adapted" condition outside of neighborhoods of equilibrium—for the banking system, and it cannot be said to be an obvious interest of the banker, supplying the explanatory principle of his behavior. Economists who, on the strength of a general schema of business behavior, insist that it is have themselves to blame for the quotes that the practical banker applies to their "theories." This consideration completes, from the practical side, an argument presented in the preceding chapter, and, of course, applies with added force to the only real case—that of imperfect competition.

Now, initiative may mean many different things. It is not suggested that a bank's directing committee is an automaton. Our view of banking is, in fact, much less mechanistic than that of those theorists who attribute to banks the role of prime movers in business cycles. This is obvious from the emphasis placed throughout our analysis on the element of purpose. For us it is neither the formal character of the business to be transacted—*e.g.*, the discounting of commodity bills of exchange—nor the security that makes sound banking, but knowledge and understanding of, and proper attention to, the purpose which the balances applied for are to serve. Judging the chances of success of each purpose and, as a means to this end, the kind of man the borrower is, watching him as he proceeds and granting or withholding further support accordingly—these are the fundamental functions of that committee which are more important than the mere decision how far the bank is to go in granting loans, how much, if at all, it should lean on the bankers' bank, how great a risk of maneuvering itself into a tight corner it should undertake, and so on. The above statement that a bank cannot normally take the initiative in its business with its customers merely meant that it cannot normally initiate the individual transaction. Its truth becomes obvious if we consider what that would involve. As far as the financing of enterprise is concerned, it would involve suggesting definite plans to, or urging on, people who have every motive to go ahead and must nor-

mally be expected to know the ground on which they are standing better than any banker can. There are, no doubt, exceptions to this. The practice of banks of the *crédit mobilier* type supplies the most important one, especially in cases like mergers or in cases in which an innovation acquires additional importance from simultaneous developments not within the horizon or radius of influence of the man who is to carry it out. Independently of this there are occasions—they may be the high points in the career of a great banker—in which a bank can successfully make itself responsible for an enterprise by pledging its support and committing itself to seeing the entrepreneur through. But it is evident how risky this is. As a rule, it augurs ill for a proposition if it has to be forced on the primarily responsible man. But the same applies, in a lesser degree, even to current transactions. A bank often sees reason to restrain, but it is rarely in a position to ask its customer: Won't you borrow in order to do this or that? The chief exception with some banks in some countries is the role they assume in dealing with private investors or speculators. But that is another matter.

It might be urged that initiative need not go as far as this but can be exerted without any particular suggestions by assuming a general attitude of encouragement, which consists mainly, though not wholly, in offering attractive conditions and in conveying to wavering customers the impression that if they go ahead they will not do so alone. Even a small bank may do that if it observes that others do it, but a bank important enough to influence situations by its own action or example seems particularly able to impart such a stimulus. Hence the question, which in fact is very frequently asked, why the banking system does not use this power or even, as some would put it, why it uses it viciously, *i.e.*, so as to intensify both booms and depressions. Recalling our discussions of historical cases and the relevant argument in the preceding chapter, we may first repeat that no encouragement from banks is necessary in order to start a prosperity phase and that such encouragement as has been actually proffered —it mostly comes within our concept of reckless banking, witness, for example, the events preceding 1837 and 1907—can be shown to bear a close relation to the occurrence of crises and downward spirals; second, that no discouragement from banks is necessary to bring about the turning point into recession in our sense, and that such discouraging influence as is sometimes exerted only serves at that juncture to steady and not to dislocate the system; and third, that near or at the lower turning point interest rate is in any case low and falling and bankers' attitude as a rule encouraging enough. That question, therefore, narrows down to the behavior of banks before and during depression. It has been pointed out in the preceding chapter that the end of recession is the only stage to offer possibilities of corporative initiative by banks. The reason why

more use is not made of these possibilities is analogous to the reason why initiative action by banks could do but little once a downward cumulative process has set in. Banks control one element only of the situation in which businessmen find themselves, and that situation contains so many hitches and untenable positions that such action, besides becoming extremely difficult, cannot be expected to be effective. But it is true that the survival interest of each individual bank then drives it into courses of action which, even without panicky calling of loans—very important though that element is in the mechanism of crises, and though it was especially so during the earlier part of the prewar period—tend to intensify the phenomena of the spiral. All this only amounts to recognizing again, this time from the side of banking practice, that interest is not the hero of the cyclical drama.

No apologetic purpose is either intended or served by this analysis. On the contrary, its suggestions could, if this were within our purpose, be worked up into a very comprehensive plan of regulation; but it would have to be primarily restrictive in nature, although not wholly so. And it would have to aim at improving personnel and at enforcing adherence to standard practice rather than different principles of practice. Machinery which would enable some authority to force banks to take initiative action would, if effective at all, in most cases lead to additional maladjustments. In those cases, moreover, in which such machinery could be expected to have remedial or preventive effects it would still be inferior to a policy that, while leaving the banks free to fill their function, would directly act on the economic process—by government expenditure, for example.

2. To economists who can see in the business cycle nothing but an effect of the working of the banking system, and particularly in depressive situations nothing but "deflation," which could almost at will be turned into prosperity by "reflationary" creation of deposits defeating the attempt of business to deflate itself, our argument may well be inacceptable, although it seems to agree with rather obvious facts of business experience—which is the reason why we fared so well, in discussing the behavior of clearings, deposits, and interest, with the working hypothesis of a "passive" banking system.[1] Nor will those agree for whom prosperity and depression differ in nothing but the state of businessmen's minds—elated in the one condition and depressed in the other. For if there were nothing in the objective situations to account for those humors, it would be plausible to assume that psychotherapeutic behavior on the part of banks would never fail to be effective. However strong the

[1] It should be observed, however, that the word *passive* does not express our meaning well and might easily prove misleading. The preceding paragraphs sufficiently show that we do not mean more than that banks primarily act in response to business situations, which cannot in turn be explained by their action.

evidence which verifies our view, it cannot be made fully convincing except by reference to the whole of our analysis of the cyclical process. But some points still remain that require specific notice. They all link up with member banks' operations in the open market.

It has been stated above that while the behavior of banks during or in expectation of breakdowns may acquire causal significance for some of the features of "crises," the upper turning point is not normally brought about by banks' calling loans because, having run up against technical limits, they are losing cash and, therefore, have to retrace their steps. "The greater number of cyclical fluctuations keep well within these limits," even in this country, and there is "no basis for the belief that these cyclical swings never halted until the resources of the banks had been exhausted."[1] But banking systems *seem* to approach those limits much more closely than they actually do, because they do not keep the whole of their surplus funds in the form of cash and balances with other banks but allow part of them to earn interest by means of temporary investment. In substantial agreement with practice, we call such investment the Secondary Reserve. Now this policy is, indeed, what the customers' business is not, *viz.*, first, actuated exclusively by the desire to use funds as much as possible; second, entirely a matter of the initiative of the banks' managing committees; and third, as mechanical or routine as anything in business can be. As soon as committees have settled what credits they are to grant to their customers, the surplus to be temporarily invested, in all normal situations and excepting cases of speculative booms that make the open market abnormally attractive, is determined and will be invested—as far as member banks are concerned—with little regard to the general business situation, which asserts itself more in the kind of investment to choose than with reference to the decision to invest.

This is, as we have seen in Chap. XII, what pulls down open-market rates so drastically in depression as soon as panics, if any, are over, and even in the other phases normally tends to keep them at a low level. As we have also seen, effects extend to the stock exchange and in particular to bond prices. But there they stop until business reacts to more fundamental stimuli. Even bond issues do not react to low open-market rates alone. Conversely, progressive liquidation of temporary investments when business revives, restores normal financial habits and helps to raise rates again. However, even if banks were always "loaned up" in this sense, the same consequences would not follow as if they were loaned up in the relevant sense, *i.e.*, in their customers' business. In particular they need not normally, if "loaned up" in the wider sense, restrict the latter on the ground that they have expanded to a technical limit—

[1] A. A. Young, *op. cit.*, p. 28.

although as prosperity wears on other reasons may suggest themselves for doing so—and the very presence of secondary reserves outside the depression phase is proof that they never want to be "loaned up" in the narrow sense.

What secondary reserves consist in is a question of fact to be answered differently for different times and countries. Where there are facilities for rediscounting, high-grade bills of short usance, short-time government paper, and so on are the classical items; where such facilities are lacking, call loans to the stock exchange. It depends on the organization of markets and on the traditional behavior of the public what other "embodiments of future balances" qualify for the role. Government bonds, possibly also other bonds, may so qualify; and, where banks have the legal power of holding it and trading in it, even common stock. In the case of German banks, the motive of employing surplus funds in this way undistinguishably merges with the motive of supporting the prices of securities of the concerns they patronize. It should be observed that each member bank thus fulfills with reference to firms and households and within its sphere of influence a function akin to that which bankers' banks' open-market operations fulfill with reference to member banks. It buys, and thereby supplies the public with liquid funds, on the downgrade; it sells, and thereby curtails the public's available means—a qualification will presently be noticed—on the upgrade. This mechanism does not work alone or in a world in which other things are equal and therefore its regulative effects are, no doubt, often overshadowed by many other factors. But the profit motive is sufficient to set it into motion. In the case of common stock, this is obvious. In the case of bonds, the practice under discussion means that banks buy when bonds are dear and sell when their prices have fallen—accentuating the fluctuations in bond prices which would otherwise prevail. Such operations are remunerative, nevertheless, since the funds engaged in them would otherwise be idle. So we see, again, that neither machinery nor motive is absent for meeting any pessimistic moods of the public by the creation of balances. Only, there is little point in arguing that it should be made more effective, since, as pointed out in Chap. XI, even the balances actually created tend to become as idle as the corresponding funds of the banks would be.

There can be little doubt that the investment item of the American banks was for our period mainly of the nature of secondary reserve. There was a significant special trend in it. But both New York and outside banks—which do not differ as much in their investments as they do in loans—purchased bonds primarily when their surplus funds increased and sold—or, at all events, purchased less—when their customers' business expanded. In the case of outside banks, though not of those in New York, this meant strong inverse relation in the fluctuations

in investments to the fluctuations in loans and discounts, which suffices to establish our point.[1]

3. Of course, member banks' investments cannot entirely be accounted for by the secondary-reserve hypothesis. To begin with, political necessity or pressure may, in times of abnormal government expenditure, compel banks to increase their investment in government bonds to an extent altogether beyond the range of secondary-reserve considerations. Second, we know that one method of financing real investment, or even current expansion, is to sell assets to banks (Chap. XI), an operation which differs from borrowing in technique only, but tends to impart to the investment item a time shape exactly opposite to the one we have described. The statistical picture proves that for the prewar period the latter prevailed. This need not always be so, however. During and after a time of abnormally great government expenditure, for instance, not only banks but the public may be so saturated with government bonds that buying and selling them may well become the central element of their dealings with each other. In this case, firms and households would, on the one hand, be much more independent of normal bank credit and, in consequence, of the advice and the approval of their banks, and it would be much easier for them, or some of them, to resort directly to the open market in order to finance themselves. On the other hand, the banks, while losing their hold on industrial operations, would be much more in a position to act initiatively within the sphere left to them under such circumstances. They could then with more justice be said to "regulate the flow of funds" and to control the volume of balances. The postwar period illustrates this.[2] Only it would not, on that account, be any truer to say that they thereby regulate the pulse of business. On the contrary, the momentous change which permanence of such conditions would imply—and developments since 1930 strongly suggest that these conditions, and in particular government expenditure that is abnormal from the standpoint of capitalist logic, may have become permanent by now—precisely consists in paralyzing such regulative influence as they had beyond mere regulation of the amount of balances which may or may not be used. An essential piece of capitalist mechanisms would be gone forever. It is easy to see that it would be

[1] The behavior of notes in circulation accords perfectly with our view. Barring the influence of the introduction of the 2 per cent consols by the Act of 1900, they fluctuate much as money outside of treasury and banks and with the rate of interest. They thus followed the pulse of customers' business, as we should expect.

[2] In spite of the sentence that follows in the text, it should be pointed out that, since most adherents of what we have called the Investment Theory of Banking (Chap. III) as a matter of fact mainly reason on postwar facts and problems, the difference between our view of banking and those of most economists of our day is not quite so great as it seems

government, acting not through the mere offer of facilities but through expenditure, and not the banks, which might then really acquire something of the power that is being wrongly, though usually, attributed to the banks: these would be more powerless than ever in starting the movement of the economic body from troughs to higher levels of activity, though they would have the same power they always had to foster excesses.

Third, the investment item transcends secondary-reserve considerations and acquires additional importance also in the case of banks which on principle participate in the ventures they finance—roughly, in the case of the *crédit mobilier* type,[1] as exemplified by German banks. It is part of the task of *any* bank's managing committee to exert what, in distinction from business initiative, we may term financial initiative, *i.e.*, to suggest to, sometimes to impose on, its industrial customers financial policies and in particular answers to the questions how far and how long they are to finance themselves by borrowing in current account and when and to what extent they are to fund these debts by the issue of bonds or stock.

As we have seen (Chap. XI), such refunding either annihilates deposits or, if the bank (or another bank) finances subscriptions, substitutes new debtors for the old one, and in both cases powerfully affects not only the situation of the bank itself but also the whole banking system and the open market. Issues intended to finance real investment may be said to do the same thing potentially. But banks of the *mobilier* type themselves acquire parcels of stock, either because this strengthens their hold on the current business of customers and their claim to manage the future issues of the same concerns, or because they wish to influence the latter's business policies—particularly to acquire positions of strategic value in negotiating amalgamations—or because a given issue is not yet ripe for introduction to the public, or because they intend to trade in it permanently, or simply in order to profit by appreciation. Such investments, which in many cases develop into the most valuable part of the assets of a bank and into the backbone of its business, and which enter the balance sheet either as "permanent participations" or as "securities" (*Effekten*), are, of course, built up for their own sake and are largely, though not wholly, exempt from the considerations incident to what English or American opinion holds to be normal banking business. The statistical implications of this need no emphasis. Other aspects have been discussed in Chap. VII. As has been pointed out there, even in this case the real influence of banks does not, in general, amount to control

[1] It should be borne in mind that the above expression is used because the writer supposes that it conveys what he means. We know that historically it is not quite correct. See Chap. VII.

of what is being done, although it often amounts to control of the shareholders' meeting.

B. The Central Market (in an Isolated Domain).—First, the limited purpose of the following discussion of the role of banker's banks in the cyclical process must be borne in mind throughout. A very misleading impression would be gathered by the reader if from the points to be touched he tried to construct a general theory of central banking. Second, complete analysis would have to consist of a string of historical interpretations of individual central banks or central bank systems, some fragments of which have been offered in previous chapters. Beyond a small number of propositions that may be true of every institution or class of institutions that can be partly or wholly identified with central banking, it is extremely dangerous to generalize, because environments, organizations, habits of doing business, attitudes of and toward member banks, firms, and speculation, relations to government, and so on differ so widely as to impart different meaning, at different times and in different countries, even to identical forms and phraseologies. Two instances will be sufficient to emphasize this once more. A universal spirit of sound money and sound banking in the classical sense pervaded the English business and banking communities for most of our period. This made all the difference for the nature and effects of any measures taken by the Bank of England: exactly the same measures—and, of course, both policies and phraseologies of English banking were widely copied—taken by a bankers' bank in a country of different mentality would have differed from the paradigma, both in economic meaning and in effects. Again, we shall later notice the importance for the policy of the Bank of England and for the results it produced, of England's creditor position. For the moment we defer consideration of gold movements, international relations, and exchanges, and consider central banks as if they functioned in isolated domains. But even so, the difference of which that creditor position was one of the consequences, remains essential, *viz.*, presence at any given point of time throughout the period of a relatively great amount of accumulated wealth which behaved according to an established tradition and made things very much easier for the central institution than they were in other countries. This fact alone suffices to make the application of the principles of English banking to other countries as doubtful a matter as the application of English principles of parliamentary government to other national patterns has been or would have been.

Third, our central market, consisting of the transactions between the bankers' bank and member banks and the operations of the former in the open market, is, of course, a bold abstraction. From previous discussions it should be obvious that in the case of the Bank of England, for instance, our concept of transactions between it and member banks is

(in part) a useful fiction representing actual fact. But it is (in part) a fiction all the same. Moreover, until the foundation of the Federal Reserve System, hardly any central bank confined itself to bankers' bank business in our sense, and no central bank—not excepting the Federal Reserve System—ever covered all the functions we attribute to bankers' banks. As regards the latter point, we ought really to speak, even in the English case, of a bankers' bank system rather than of a single Central Bank. As regards the former point, the historical importance of central banks' member bank business has been emphasized before. It should be added that this business was a most important lever for influencing the structure of credit and greatly strengthened the hands of the central bank in its bankers' bank functions: it gave it a hold on the market which any mere bankers' bank must always find it difficult to acquire. That in some respects it also fettered the hand it made stronger will, on reflection, be seen not to involve any contradiction.

Finally, in the American case, some readers have probably taken offense before this at our associating central-bank functions in this country primarily with New York banks. This seems to run counter to obvious facts, the outstanding one being that under the rule of the National Banking System as amended in 1864 and 1887 a system of reserve and central reserve city banks developed, which legislation itself, by imposing special reserve requirements—in the case of central reserve city banks, also, by insisting on reserves' being kept entirely in their vaults—recognized as bankers' banks and balances with which other banks were allowed to count as part of their legal reserves to $\frac{3}{5}$ of the total amount of the latter. This practice of using checking accounts with certain banks as reserves, or of redepositing reserves and, generally, surplus funds with correspondents in more central positions, of course, established a relation of current cooperation between the latter and their banking customers (brokers, bond houses, investment trusts, and so on as usually included). Correspondents undertook to act as agents for these as for other customers, advised them, did their foreign-exchange and open-market business for them, used them in turn as agents for collection and other purposes, and, last but not least, accommodated them in cases of seasonal and cyclical tension. This bankers' bank business was highly competitive, and, hence, worked out very advantageously for the member banks in our sense of this term. They received, not only a considerable amount of gratis service, but also interest on some rough average of their credit balance, which for the two last decades before the Federal Reserve Act is usually estimated at 2 per cent.[1] According to the Comptroller's reports, about

[1] On the other hand, the correspondents, unless they confined their business with non-bank customers to local proportions, were hardly able to go without these connections. This fact, the not very profitable character of these connections in themselves, and the

half of the deposits of the banks in central reserve cities were bankers' balances. Under these circumstances, our reliance on New York bank figures, of course, means relying on a sample of American bankers' bank activities. But this sample includes the roof of the structure and its most important elements, and as has been mentioned before, the behavior of the figures goes far to justify our choice.

We start from the analogy that we have previously noticed between the relation of a member bank to its customers, firms and households, and the relation between a bankers' bank and the member banks it banks for. Once the nature of the variations in system expenditure in the cyclical process of evolution and their relation to the balance-manufacturing activity of member banks (*member creation*, as we call it) is fully understood, the fundamental questions of principle regarding the balance-manufacturing activities of bankers' banks (*central creation*) are, *ipso facto*, solved. In particular, we readily realize that a bankers' bank can, still less than a member bank, afford, or have an interest, to be "loaned up." This and the consequent fact that central banks always kept a comfortable margin are for England and Germany so obvious that it would be waste of space to elaborate them. In the United States, both facts are blurred by their very recognition by legislation.[1] The technique of this legislation, however, so curiously mixed up quantity and safety considerations that it would have been necessary to keep a surplus reserve, even if the legal minimum had been sufficient to meet all cases—which a rigid figure in the nature of things can never be as long as it is below 100 per cent. But this was, owing to the circumstances just glanced at, both a difficult and a costly thing to do. However, it is worth while noting that, quite abnormal situations excepted, the New York banks' resources were never exhausted in any phase of the cycle, and that they almost always managed to keep free surplus reserves, though only modest ones—in the last decade before the war they averaged for the months of the autumnal drain at about 1.5 per cent.

This, of course, quite accords with our view of the actual role of central banks and indirectly teaches something about it. Their position

necessity to supervise closely the member banks on the safety and success of which the safety and success of those bankers' banks themselves largely depended, combined with the doubtful quality of the managements of many of the—especially pigmy—member banks to create a situation, the natural remedy for the practical difficulties of which would have been mergers plus branch banking. The merger movement, in fact, gathered momentum from 1900, when the amendment to the National Bank Act still intensified the struggle between larger banks for member banks' balances (see chart on p. 358, H. P. Willis and J. M. Chapman, The Banking Situation, 1934). If it did not go far enough to strengthen the credit system of this country, that was due to hostile legislation and to an attitude of the public mind which would not have stood the formation of units big enough to be really safe and effective.

[1] Statutory requirements as to reserves against bank notes have nothing to do with the above argument.

and the quantitative weight of their business are such as to make their mere attitude and example a matter of moment to the banking community and to the business world in general. Rediscount rate—or, more generally, the conditions at which they stand ready to finance member banks—rationing, suasion, open-market operations undertaken *ad hoc*, need be mentioned only, to call up roughly appropriate ideas in any mind that is not misled by theories and plans. It may, however, be added that rationing was not an emergency measure but part of the ordinary routine of bankers' banks. No member bank was allowed to rediscount or borrow all it may have wished to, but, if the writer may judge from the practice of the only great central bank which he thoroughly knew and from such indications as he was able to gather about the practice of two others, every member bank was closely watched, not only as to its balance sheet, but also as to its personnel, the nature of the transactions it entered into, its affiliations, and the kind and quality of its customers—whether, for instance, they were retailers or industrial firms, geographically and economically distributed or concentrated, and so on. Gossip about them and their leading men was carefully collected. Thereupon, it was decided what its "ration" was to be. This was then varied cyclically, besides being currently revised on the merits of the individual case. By suasion, as distinct from (general) attitude, we mean attempts to influence individual member banks or groups of member banks. It covers a wide variety of things and would, in some cases, better be designated as scowling or snarling. It ranges from threats—of which the threat to withhold accommodation is only one—and admonitions down to such measures as extending or withholding invitations to official dinners. Though the possibility of producing effects by such methods greatly differs from country to country and from time to time, no one who is at all familiar with the working of credit institutions will deny that it is considerable. This alone suffices to prove, if proof be wanted, that bankers' banks cannot harbor any systematic tendency toward being "loaned up," and that the argument in the previous section applies to them with added force.

It would be quite wrong to think that central bank action is merely adaptive or passive in any sense other than that it is typically action in response to a situation not itself created by the central bank. The writer confesses his inability to see the point at issue in the ancient controversy whether bank rate is "declaratory" or "constitutive." As far as the bankers' bank also transacts member bank business, it cannot help being if not the, at least a, leader in an imperfect market. As far as it does central bank business only, it is in certain cases a monopolist and in all cases in a position in which any of its moves must be a factor in the subsequent situation. Even if it never aimed at anything else but at fixing its rate in such a way as merely to declare or register what the financial

situation is, we should have to recognize that the man who has it in his power to hoist a danger signal at will thereby unavoidably acquires the power to create, as well as to declare, a situation. But the very position in which a bankers' bank finds itself makes it practically impossible merely to register the state of things such as it is at the moment, still less the tendency of market rates alone.

Central banks' rates and attitudes owed much of their effectiveness to the fact that member banks and the public looked upon them as symptoms of the situation and, to a considerable extent, reacted accordingly. It is also true that the powers of central banks to exert *mechanical* effect seemed—to economists as well as to business men—to be greater than they really were. Yet the means at the command of central banks to exert such effects, sometimes acting upon sensitive margins, were obviously adequate to managing any ordinary situation and also to securing for them considerable freedom of action, though much more of course in the case of single central banks than in the case of competitive bankers' bank systems. Criticism, which has become traditional, draws a different picture—mainly, it seems, for three reasons.

First, most critics concentrate attention on exceptional situations. It is, no doubt, relevant to the analysis of the functioning of any central bank or central banking system, to see how it lived in rough weather. But to make this the only criterion implies overlooking all the problems to be solved in the normal run of things, which it is easy to overlook precisely because they were solved successfully. Second, it has been urged that central banks reacted mechanically to the behavior of certain indices relevant to their own situation and perhaps that of the money market and of the currency, without any regard to the economic organism of their nations as a whole and without any conception of the therapeutic influence they might have exerted. But if we consider what it was that the Bank of England was supposed to react to—reserve proportion, gold movements, and so on—it becomes evident that in the vast majority of cases (and in exceptional situations neither the Bank of England nor the Reichsbank acted upon such indices alone), diagnosis of the cyclical situation of a country would have coincided with the inference that any outside observer could have drawn from those indices, and that action upon that inference must, hence, have had some "stabilizing" effect on volume of transactions, prices, and so on. Finally, however, most critics speak from the background of a banking theory of the business cycle and imply that central banks should be able to iron it out entirely. Such a misconception of course negatives all possibility of realistic analysis and substitutes a spurious problem for the real one.

It is at the same time obvious from the nature of the means by which central banks may influence economic processes that there are definite,

though elastic, limits to their effectiveness, and that those means go much further if the intention is to put on brakes than if the intention is to stimulate. That this was so as a matter of historical fact cannot well be doubted. But it is, again, a distinct question whether this was so merely by virtue of the ideas about sound currency that framed the legal powers and duties of central banks, their traditions, and practices, or because of more fundamental reasons. As we have seen in the case of member banks, that legal or customary restrictions, though they may be practically unavoidable to curb recklessness, do not create the necessity for that attitude of restraint that is inherent in the conditions of banking, so we have no difficulty in recognizing in the case of central banks, that an analogous attitude would impose itself on them by virtue of the logic of their situation, even if no legislation or tradition enforced it. The main obstacle that prevents the adherents of the most varied "schools" to see this is the argument that a central bank, being the "ultimate creator of credit," is exempt from the limitations banking practice imposes on member banks, and hence, in the absence of those legal restrictions and traditions, would enjoy almost unlimited freedom in acting on business situations. Quite apart from the fact that government could never afford to allow it to fail, it need not bother about "quality" and "purpose" of credit at all, since it would have it in its power to improve any "quality" and to justify—in the business sense—any "purpose" to any desired extent by further creation of balances. We will discuss this with reference to the sequence of cyclical situations in an isolated domain, although our material does not permit the elimination of the complications that arise from international trade, gold movements, foreign exchanges. At every step, problems of actual and of possible behavior will be kept distinct. The factor of redeemability of balances in a legal tender that also serves as cash enters, of course, into the former only.

As pointed out above, the central bank may, owing to its conspicuous position, exert some influence on the temper of the business community, which at certain critical junctures may be considerable—especially in preventing or stopping panics—but ordinarily cannot go further than hortatory efforts by leading officers of state, which are immediately put into their place by the recognition of the truth that cyclical phases are more than mere matters of psychology. Excepting this and the influence exerted by a central bank's member bank business with firms and households, it is clear from the outset, however, that its action in the central market affects the money and the open markets primarily through member banks reserves,[1] and hence the business processes beyond those mar-

[1] It is not required that the regulation of member bank reserves be a definite, clearly perceived, and theoretically understood aim of the managers of the central bank. Such

kets only insofar as variation in these reserves—supplemented by attitude and suasion—can influence them. But this means, first, that, even if central banks were so completely masters of member bank systems that their slightest move would be immediately translated into an increase or decrease of members' willingness to lend, no greater effect on industry and trade could be expected than we have seen reason to expect from variations in this willingness: one only of the data on which firms act being affected thereby, definite results could be predicted only under *ceteris paribus* assumptions, perfectly inadmissible within our process. Second, even for member banks themselves increased and decreased power to lend is only one of many factors that determine their willingness to lend, and the decisive one in some situations only and not in all. Member banks are distinct centers of economic decision. No policy of the central bank, short of a declaration to sanction and make good the consequences of any action whatsoever, can alter all the data on which such decisions rest and, in particular, the logic of the banking business described in the preceding section. It would, hence, not even be correct to say that the central bank determines the "supply schedules"—if this expression were permissible—of member banks, although it influences them by its greater or lesser readiness to shoulder the burden of tensions that may arise. The analogy between the relation of a member bank to its industrial customers and the relation of a bankers' bank to member banks is, therefore, not, as one might think, destroyed if the bankers' bank is the ultimate creator of credit in the sense in which a single central bank may be said to be: inferences from the associations which that phrase is likely to call forth would be completely misleading. Nor do open-market operations alter the argument. It has been often observed, and is indeed a patent fact, that member banks occasionally thwart the action of the central bank—a qualification will, however, be added to this in Chap. XIV, Sec. F, V—and that the latter sometimes proves to be a "dud." This is perfectly understandable from our standpoint and is no deviation from, but part of, the blueprint of the credit machine. The fact that central bank action sometimes does and sometimes does not take effect is a problem—and an awkward one—only for believers in the mechanical action on business of mere volume of credit facilities. What central bank policy can be said to determine directly—*pari passu* with members' reserves—is the central-market rate. It also very powerfully acts on open-market rates. But there is a long way from action *in* the central market to action *on* the money market in our sense, and a still

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regulation will in many cases be implied in their ordinary business behavior. The Bank of England exerted regulating influence of this kind on country and on London banks, at least from the beginning of the nineteenth century, without developing any theory or principle of it for a long time. Open-market operations are about as old.

longer one from this to action on business activity and prices. Even legally unlimited power to create balances does not imply actual power to create them, still less the power to make them active.

Since central banks mainly act on business through member banks, it is unnecessary to show that the former, no more than the latter, "cause" the system's prosperity excursions, though they could conceivably prevent them. In strict theory, particularly if the preceding neighborhoods come sufficiently near to being equilibrium states, central bank action at such times may with equal justification be said to be absent or neutral or confined to those small adjustments of the steering wheel that are necessary even on the straightest course in the calmest of seas. In the absence of effects of external factors or of phases of underlying cycles, there is, during this situation, as much encouragement to member banks in the central bank's attitude and rate as there is encouragement to entrepreneurs in member banks' attitudes and rates, and no more—there is hence no Wicksellian effect from any discrepancy between money and real rate of interest. The presence of external factors—capital and gold movements, in particular—may alter all this, and it is in connection with these that the true role of central bank initiative reveals itself. But this we disregard for the moment. As prosperity sets in, the central bank typically watches the expansion of business volume and of banking activity, slowly raising its rate in response. Normally there is at this stage no motive to exert restrictive initiative, nor would it be easy to do so, both because of the pressure of public opinion and because of the fact that the money market is, as we have seen, not only sloppy in the sense in which the market of any commodity may be, but in the special sense that its funds are *normally* underutilized in and immediately after a neighborhood of equilibrium, so that any practically feasible attempt at restriction would be thwarted by members,[1] and nothing but the most drastic open-market operations could avail—borrowing unlimited amounts at 10 per cent, for instance.

As prosperity wears on, however, and member banks liquidate part of their secondary reserve—calling demand loans to the stock exchange and to bill brokers—the rising bank rate tends to become effective, both in the sense that it applies to a larger volume of business which the tightening of the open market drives towards the central bank, and in the sense that it exerts restraining or punitive influence. In London, for instance, more and more of the bill brokers' material had, at that stage, to be offered at the Bank for rediscounting. This theoretically goes on, and in

[1] In practice member banks could also thwart a policy of stringency which the central bank may be trying to impose, by shifting balances among themselves and drawing funds from abroad. Issues of stocks and bonds, however, primarily act in the direction in which the central bank wishes to steer. A policy of restriction may, in fact, be intended to enforce issues.

practice mostly did go on, until the situation reversed itself and the economic process settled into the perfectly normal and anything but catastrophic processes of recession. There was no spectacular management about this, such as ardent stabilizers wish to see, but it *was* monetary management involving a lot of general guidance of things, and central banks, such as the Bank of England and the Reichsbank, can no more be said to have mechanically followed events than a horseman, who refrains from spectacular whippings and spurrings and acts on his mount primarily by small adjustments of his seat, can on that account be said to "follow" his horse. Nor were there at those junctures any sudden jerks caused by central banks' running up against technical limits and causal to the occurrence of the upper turning point—which could be compared, if we wish to keep to our analogy, to brutal pulls at the curb, productive of discomfiture to horse and rider.

This is what, in the absence of external disturbances, central banks actually did, although the picture would in its details have to differ for different periods and countries, in particular according to whether central banks directly rediscounted for member banks or not. It should be observed, first, that in important points, though not in all, our sketch supports the classic theory of central banking. But it could almost equally well be expressed in terms of more up-to-date theories of monetary management. The objection to both is that they remain on the surface. But as far as they go, the real difference between them does not justify the emphasis put upon it. Second, it should be noticed that central bank behavior as outlined also conforms to the rules the profit motive would dictate. Only, they would have to be defined not by the principle of maximization of instantaneous profits but with reference, on the one hand, to the general logic of banking and, on the other hand, to the fact that a concern, situated as the central bank is, can never fail to link its interest with the state of the whole economic organism. Third, the formal analogy may be mentioned which exists between the cyclical and the seasonal situations that central banks have to face. When, in particular, prosperity is under way they face a situation technically similar to that which first attracted the attention of economists under the heading of Autumnal Drain.[1] This and similar seasonal variations in the volume of borrowing and in the flow of cash (income tax payments, Christmas business, and so on) bankers' banks learned how to handle, although the fact that crises broke more often at times of seasonal strain than at other times persisted throughout the period. In England there was no significant association between bank rate and either London clearinghouse figures or circulation (notes plus coin) *within each year*,

[1] *Cf.* W. S. Jevons, On the Frequent Autumnal Pressure in the Money Market, *Journal of the Royal Statistical Society*, 1866.

although there was between seasonal gold movements into and out of the Bank of England, bank rate and the price of gold. In Germany the handling of seasonal strains was facilitated by special legislation (increase of tax-free amount of bank notes issued in order to cope with quarterly requirements; no provision, however, was made for the autumnal drain). In the United States the experience of 1907 exerted some pedagogical influence that relieved seasonal tensions. But more important than the analogy is the difference between seasonal and cyclical problems—the former presenting nothing but the clear-cut task of minimizing inconvenience; the latter, the much more formidable one of dealing with a fundamental economic process.

What central banks *could* do if they were freed from technical fetters and, in particular, from the pressure of currency movements and of foreign exchanges is another matter. It has been stated above that they could, in the limiting case, not only prevent all member creation but, by taking up all available funds, prevent prosperities themselves. It is no less clear that in the atmosphere of high prosperity, with excesses everywhere in full swing, expanding member bank reserves would induce increased lending and take effect in the business world. Hence, by unreservedly standing for indefinite inflation bankers' banks no doubt could defer occurrence of the upper turning point indefinitely, *i.e.*, until the monetary system breaks down. Unless this be an end in itself, there seems, however, no point in trying to fight recession when it sets in if we remember what it normally means. We have here the final reason why any really or hypothetically unlimited power of central banks to create credit makes, practically and analytically, less difference than one would suppose.

When, in the course of recession, business normalizes itself and liquidity increases all round, central banks' control over member banks' reserves and the open market and their indirect influence on business become progressively weaker. The horse is no longer running up to his bit. But in the absence of international complications this does not normally create any problem necessitating interference by restrictive open-market operations. On the contrary, central banks are in this phase both able and willing to give rein and even to urge on by a low rediscount rate, although no initiative on their part is as a rule called for. This statement, which implies that depression (not crises) should set in while conditions of easy money prevail, hence not because of monetary stringency, can sound paradoxical only to adherents of monetary theories of the cycle—some of whom will, it is hoped, be converted by the obvious facts of 1937 to 1938—and amounts to saying that central banks can do little beyond what their admonitions may effect in order to prevent depressions. What can be done at all from the banking angle, member

banks should in that situation be able to do themselves. This is almost, but not quite, independent of the legal fetters imposed on central creation, for if there were absolutely no limits to the latter and if the central bank made itself unconditionally responsible for whatever transactions people were prepared to enter into and undertook to finance all ensuing deficits ever after—otherwise a crisis would immediately follow upon the withdrawal of the guarantee—this would no doubt produce effects.

For the same reason and with the same qualification, there is not much room for central bank initiative in the course of depression. If facilities were forced upon them by open-market buying, member banks would thwart the intention, first, by using their access of funds in order to repay their debts, and then by accumulating secondary or simply idle reserves. Moreover, it follows from our diagnosis of the nature of depression that, as far as they could be prevailed upon to accept against their judgment such business as they may be able to attract under the circumstances, this would be a source of additional difficulties in the future. But there is another way in which the latter effect may follow from an attempt of bankers' banks to enforce expansion of the volume of balances during depression. It is obvious how difficult, if not "politically impossible," it must be to retrace such steps. The opportune moment for doing so will, in the eyes of the member banks and of the public, never come. The delicate processes of incipient revival could, in fact, be easily stalled by anything looking like restriction, and public resistance is not likely to decrease later, particularly if member banks have accumulated not idle but secondary reserves. Thus the system might reach the neighborhood of equilibrium in a state of abnormal liquidity, and in the subsequent prosperity the central banks' action in the previous depression, or the member banks' surplus reserves created thereby, will indeed produce effects, *viz.*, speculative excesses, reckless banking, an overgrown Secondary Wave, and later on, breakdowns. It is this vicious effectiveness of therapeutic efforts of this type rather than the mere futility of trying during depression to drown pessimism in a flood of credit that should be stressed in arguments about it. We may note in passing that permanent expansion of the circulating medium may in this way ensue, and that fluctuations of prices may thenceforth be permanently from a level higher than would otherwise obtain. Gold discoveries act in the same way rather than by directly creating prosperities.

It is recovery which, of all the phases of an ordinary cycle, presents the most difficult and most important practical problems for bankers' banks. The situation may so clear up in the last stages of depression that the responsibility can be taken for a lead that may help to bring about the lower turning point more quickly without producing undesired effects

as well as the desired one. But for reasons we need not repeat, such a lead is likely to be followed much more promptly by those sectors of the community which are likely to overdo things than by the ordinary run of "legitimate" business. And this difficulty grows in importance in the later stages of recovery, when everyone realizes the upward tendency and is disposed to press forward in any case. The necessity for steadying advance thus soon becomes more evident than that for propelling it, and we shall not be surprised to find that central banks were, in revivals, as a rule more concerned with controlling general liquidity than with trying to add to it, and to take an attitude which the public very naturally disapproved. Under the general conditions of revival, the money and open markets were most likely to get out of hand, and it was, hence, primarily the experience with the excesses and vicissitudes that frequently occurred in revivals—Juglar revivals, in particular—which eventually led to an almost general demand for measures calculated to strengthen central bank control. It follows that central banks could have done more than they did to stabilize things in revivals. But the main obstacle to this was public opinion, although until the end of the seventies neither the task nor the technique was perfectly understood. They also could, if freed from technical fetters and from any other consideration except how to produce booms, have accelerated the processes of revival at the expense of producing corresponding slumps.

Nothing has been said about how central banks did behave or, to retain our double-track argument to the end, could have behaved in crises. In order to bring out the fundamental question, the above analysis has been conducted within the walls of assumptions that not only excluded the problems incident to international relations—gold movements in particular—and to domestic disturbances of a non-cyclical nature but, as much as possible also, the abnormal features of the cyclical process itself. Within these restrictions we have seen that, by guiding and managing all the time, central banks allowed the cyclical process to take its course, taxing expansion in the later stages of prosperity, but did not by their action create any of the cyclical phases; that such guidance had also another rationale than mere regard to golden fetters would imply; that it rarely if ever required that bank rate should precede in the time sequence of the factors of business situations and that its failure to do so did not cause or aggravate slumps; that by its nature and not only by statute or tradition, regulation primarily meant restrictive regulation; but that this regulation was never mechanical or uniquely determined by obedience to a few indices. And it would be easy to understand on these considerations alone that bank rate was, in both England and Germany, regularly above the rates of the open market. But it might be urged with some justice that the behavior of such a regulating agency cannot be

described in terms that exclude precisely those irregularities which according to some economists primarily call for regulation.[1] Within an isolated domain, the relation of central banks to what we call reckless banking, speculative excesses, fraudulent or irresponsible business activity—especially, finance—is the one of the two most important points, and the treatment of crises or panics is the other.

Dealing with the former would, in order to be effective, require a policing power, which to this day has always been quite beyond central banks. This inability of capitalism to police itself is as striking as its inability to protect itself—it always requires both a policeman and a protector of nonbourgeois complexion, who regulate, shield, and exploit it. This is as true of the times of Queen Elizabeth as it is today. But it is largely this inability that produces crises as distinguished from mere depressions. For the prewar period, at least, historical evidence is conclusive on this point. As soon as we accept this evidence we had better stop talking about the causation of crises in terms of bank rate or inadequate accommodation imposing restrictions that were relaxed only "when the damage had been done" and that turned into catastrophes what, with another central bank policy, would have been perfectly normal situations. Crises would have occurred if no central or member bank had ever called a single loan, and must be understood in the light of the fact that in any economic and social system which is unable to prevent irresponsibility and misconduct correction by consequences is the only method to prevent indefinite aberration. At least in historical retrospect and on the understanding that from this recognition of patent facts alone no practical conclusions can be drawn as to possibilities and desirabilities of later times, this should be admitted, however much we may understand, and sympathize with, all the strata which that method victimized. Then both the initiative more or less regularly taken by central banks in such situations and its limitations will appear in their proper light. Their position was such that the social meaning of crises translated itself for them into obvious business considerations. Owing to their inadequate power and will to police the world of banking and finance, their action came, indeed, unavoidably after the event—this is the only sense in which it can be held that it came "too late," and this sense has nothing to do with bank rate. Coming when it did it had to be remedial and not punitive. Success went in some cases, which we met in our historical sketch, to the length of preventing panics and *that*

[1] Although the present writer does not go so far as that, but admits that even for the most normal course of things there is a special case for monetary as distinct from other regulation, it should be pointed out that the difference between the views presented above and some that are at present more widely held is partly due to the fact that we deal here with one particular aspect. Many views on monetary management, for instance, that seem to differ fundamentally from ours primarily refer to the international gold situation.

restriction of credit which will ensue in panics. In most other cases, it is easy to see that consequences were substantially mitigated and durations of spirals shortened, as compared with what we may conceive they would otherwise have been, by the initiative action taken by central banks.

The general logic of their position shows in such situations, as it were through a magnifying glass. They obviously could not simply stand for saving everything and everybody, because this would have meant condoning error and misconduct to the point of seriously impairing the efficiency of the system with which they had to work. Saving the Gurneys, for example, would have meant saving ironworks and shipping ventures which could not have lived without permanent subsidies. But within the limits set by this consideration the helping hand was freely extended. In the English case in particular, the suspensions of Peel's Act must be interpreted not, as contemporaneous and later criticism often interpreted them, *viz.*, as so many breakdowns of the engine, but as parts of it that were put into operation in order to show in moments of panic the "ultimate creator of credit" in all the glory of unlimited power. That engine was not foolproof, to be sure, and the way in which it was operated at any given point of time and in which it was made to deal with situations that were essentially historical individuals may on a different level of analysis give plenty of scope for criticism, quite independent of any theories about the magic possibilities of bank rate. But this does not affect the question of principle, with which we are concerned.

Thus, while we need not stay to discuss the obvious arguments that may be adduced against, or the equally obvious case that may be made out for, that institutional arrangement, or the question how its sources of waste compare with those of the Gosplan, it is necessary to emphasize that *within its framework* central banks could hardly have done much more than, for example, the Bank of England or the Reichsbank actually did. Control over business beyond those limits cannot be usefully discussed in terms of banking policy but only in terms of a much more thoroughgoing type of management of the underlying industrial and commercial processes, which would call for agencies of different construction. In this sense bank reform is a technical and, moreover, an intracapitalist matter, which cannot be dealt with in an extracapitalist spirit and which has little to do with the fundamental issues of today.

Chart XXXV is presented in order to illustrate the results of this analysis. The behavior of Notes in the Hands of the Public, of course, reflects, besides the cyclical process, the secular or "structural" change that occurred in their role in the monetary system. A similar remark applies to Private Deposits, which otherwise, together with the ratio of Banking Department Reserve to Deposits and Bank Post Bills and with Other Securities, conform to expectation from our argument to an extent

which is remarkable, considering how many external factors there were to produce deviations. If the reader looks at the chart in the light of our historical report, he will easily satisfy himself that our process substan-

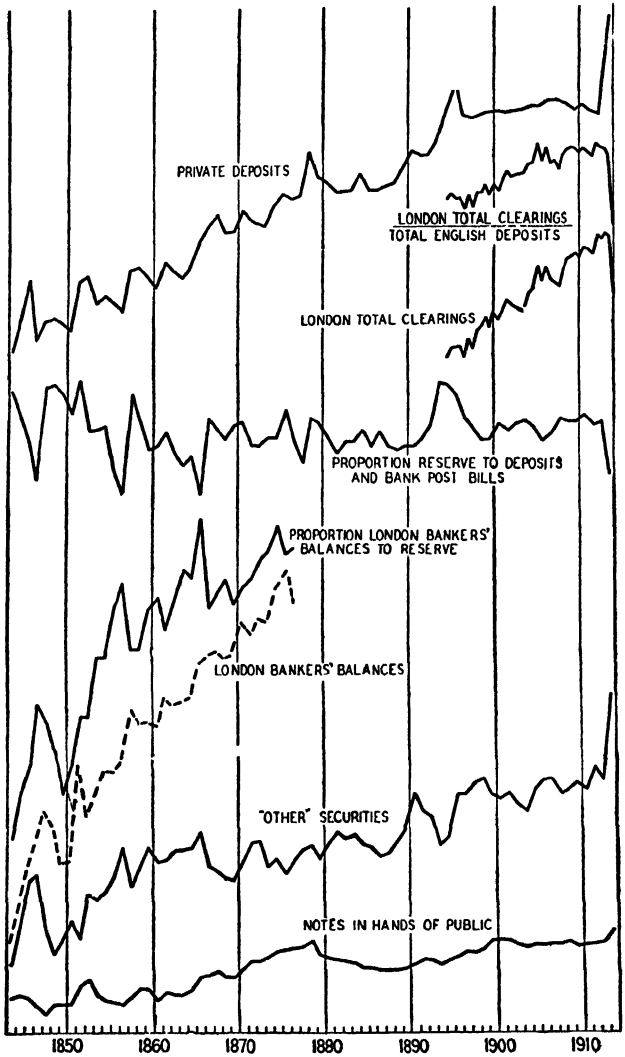


CHART XXXV.—Bank of England and Allied Series (see Appendix, p. 1063).

tially suffices to account for the behavior of those series. London Total Clearings and the ratio between them and Total Deposits (of joint stock and private banks as reported by the *Economist*) facilitate interpretation since the middle nineties. The ratio between London Bankers' Balances and Reserve obviously contains a special trend.

How far our instance of a competitive system of bankers' banks, the national banks of New York City, qualifies for the role may in part be inferred from Chart XXXVI. It should be added that the growth, as evidenced by the increase in capital and surplus, of New York national

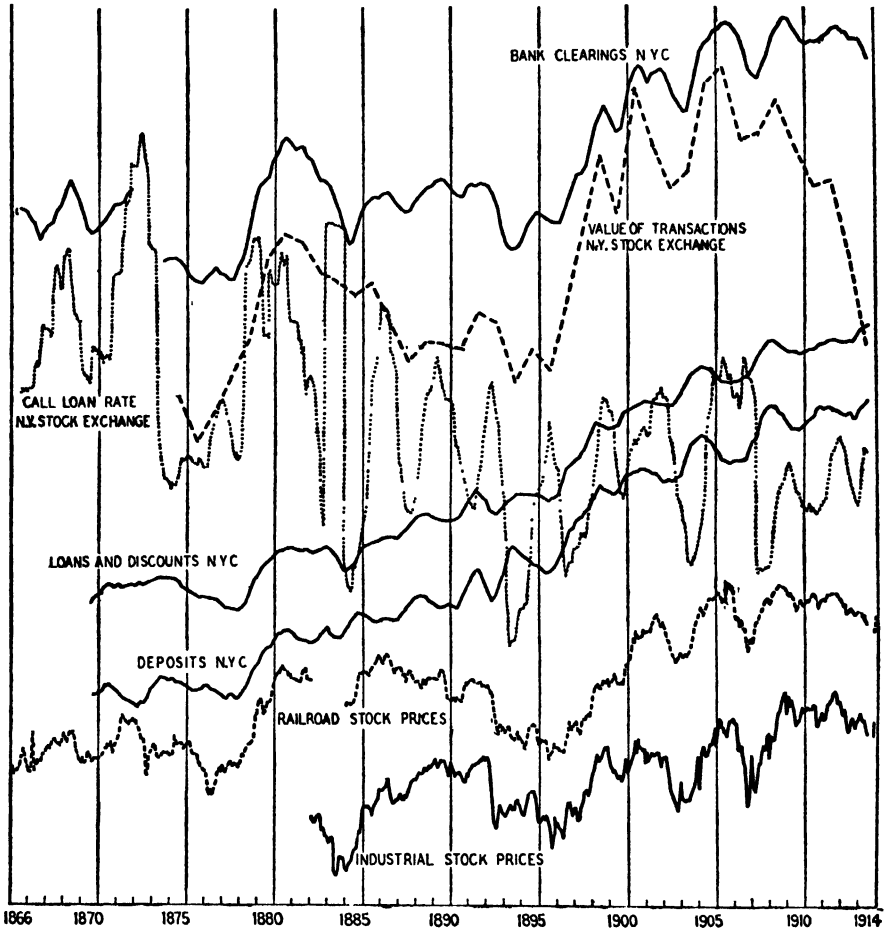


CHART XXXVI.—United States (see Appendix, p. 1064).

banks after the reform of 1900—much stronger than the increase in capital and surplus of outside national banks—was precisely due to their success in attracting deposits of national and state banks outside New York and, hence, to bankers' bank business. Study of the chart reveals the fact, pointed out before, that both net deposits and loans of New York banks moved in the short run inversely to the deposits and loans of out-

side banks.[1] This implies inverse association, in the short run, of New York loans and commercial paper rate. As has also been mentioned already, there is less difference in behavior in the case of investments, though the strongly inverse short-run association between outside loans and outside investments is not present in the New York figures, and in the case of reserve money held. The distribution of money, "lawful" and other, between New York and outside *banks* does not seem to have played any considerable role in the mechanism of short cycles in this country. All this substantially holds also for Juglar fluctuations, but in the largest contours the differences are naturally much less in evidence.

We conclude that New York banks in fact acted as bankers' banks. Of course it must be borne in mind that bankers' bank business was only part of their total activities. But it is nevertheless clear that the variations in their loans and investments were a function of the flow of money —both of cash and of deposits—from and to their "member banks," which cyclically swelled and depleted their deposits. Interpretation is, hence, exactly opposite to what it was in the case of outside banks, in the one case deposits, in the other case loans being the primary phenomenon.[2] Net deposits reflecting the variations in the difference between the amounts due to and due from other banks were, in New York, persistently and considerably larger than loans and fluctuated more strongly than in outside banks.

The competitive character of this bankers' bank system, of course, deprived its component units of much, if not all, the freedom that a single central bank enjoys. Much less power for initiative action was left to them, and they were often compelled to sail very close to the wind. As in every fall deposits were withdrawn and cash streamed out into the West and South, so in every prosperity an analogous phenomenon asserted itself and forced them to liquidate their temporary investments and even to take gold from Europe against bills drawn in payment for exports or by special arrangement. After having emerged from the Kondratieff depression in a liquid position, they had a difficult time from the second half of 1886 until the last quarter of 1893 and the first half of 1894. Then they recovered elbowroom, but in their situation they could do little to keep it. Nor were they able to fortify their situation systematically and to plan ahead, as the Reichsbank did after 1902. Hence, after five years of easy steering, their surplus cash vanished in the course of the events

[1] The comparison with the graphs for outside banks is laborious. Also, short-run fluctuations are much better revealed if trends are eliminated. For both reasons, the reader is invited to inspect A. A. Young's charts, *op. cit.*, pp. 26 and 29.

[2] Since inflow of money immediately created deposits and a corresponding access of cash but not of loans, the difference between deposits and loans must show in the surplus reserve item. So it does; see A. Piatt Andrew, Financial Diagrams, No. 22.

we have glanced at in Chap. VII. Responsibility for what no doubt was a poor showing was discussed there. It can not simply be attributed to the institutional arrangement. In particular, the argument that this arrangement threw the burden of cyclical tensions on the New York banks and purchased comparatively smooth working of the outside banks at the price of unstabilizing the former seems to miss the point. For this is precisely what bankers' banks are for. If it be held that they were unequal to the task, it should be emphasized that what they were unequal to was not the handling of normal cyclical situations but the prevention of those abnormal excesses the causes of which were too deeply rooted in the psycho-sociological pattern of the time to be controlled by any central bank, but the spirit of which had infected them also.

The competitive character of this system of bankers' banks was, however, not its only peculiarity. Perhaps still more important was another. Owing to the absence of an effective rediscount mechanism and other specifically American conditions, New York banks were in particularly close relation to stock exchange speculation. Everywhere member banks lend to the stock exchange, and everywhere bankers' banks thus indirectly helped to finance both new issues and speculation. New York banks would have done so even if they had been pure member banks. But in addition they applied to this purpose by far the greatest part of the funds that came to them from their member correspondents, so that financing the New York stock exchange was the direct complement of their bankers' bank activity, and stock exchange call loans stood in the place which in Europe was occupied by surplus cash or by secondary reserve items of a very different character. Often even time loans were made to serve the purpose. If member banks lent surplus funds directly and used their New York correspondents merely as agents—which was, as a rule, the more profitable method—the situation, while substantially the same, admitted of still less initiative on the part of the bankers' banks. No comment is necessary;[1] but the reader should allow himself to be impressed by the close, though not perfect,[2] covariation of New York Clearings, both with Value of Stock Exchange Transactions and with Stock Prices, which our chart displays.

[1] Nor is it necessary to comment on the practices concerning the "float" and "gross deposits" which it would be so enlightening to discuss for the purposes of a fuller diagnosis of the nature of that situation.

[2] Not only do imperfections occur as to trends and on many individual occasions, but there is also in the raw figures of clearings a seasonal, which is absent in stock prices. After all, New York industry and commerce was bound to assert itself. The Kondratieff branches show equally well in all series—the "breaks in trend"—though with unequal emphasis. So they do in loans and deposits. Juglar phases differ. Value of Transactions rises from 76, Clearings from 78, for instance. Call rate, on the whole, agrees better with Value of Transactions than with Clearings.

C. The Cyclical Aspects of International Relations.—These aspects of international relations cannot receive due attention within this book, and very few remarks can be offered in addition to what has been said on various occasions in the historical chapters. Of all the limitations imposed by the plan and purpose of this book, this is the most serious one. Not only do cycles in different countries systematically affect each other, so much so that the history of hardly any one of them can be written without reference to simultaneous cyclical phases in other countries, but cycles really are, especially as regards the great innovations that produce the Kondratieffs, international phenomena. That is to say, such a process as the railroadization or the electrification of the world transcends the boundaries of individual countries in such a way as to be more truly described as one world-wide process than as the sum of distinct national ones. Capitalism itself is, both in the economic and in the sociological sense, essentially one process, with the whole earth as its stage. Both reasons—interactions and supernational unity of fundamental processes—explain why in our historical survey the cycles in our three countries were found to be so much in step.[1] The fact that they were is not more obvious than the mechanism that produced it and also—in principle, at least—the manner in which these relations affected the working of prewar central banks and of the prewar gold standard.

1. Even if international economic relations consisted of nothing but trade in commodities and services, the cyclical behavior of exports and imports, as has been pointed out before, could not be expected to be as regular as that of other aggregates. Not even as to trend can any general proposition be formulated, for the process of capitalist evolution may work, and at some times and in some countries actually has worked, in the direction of increasing, instead of in the direction of decreasing, the autarky of nations, quite independently of any policy aiming at the former end. In a cyclical movement fashioned according to our pure model expectation would, if that movement were confined to one country and if the economic process in the others were stationary or merely growing (in our sense), be for decrease of exports and increase of imports in the positive phase, and for the opposite behavior of both in the negative phase. We cannot hope to find this, of course. But traces of it show in many instances, so for this country from 1872 to 1878, in 1881 to 1882, and in 1907. More convincing than totals, however, are imports and exports of non-agricultural commodities. Hence, business situations in the other countries would in this case tend to display an inverse "cycle." If the innovations which are responsible for a given cycle in a given country directly act on foreign countries, opening them up, for instance,

[1] On this, see W. C. Mitchell, Business Cycles, the Problem and the Setting, Chap. IV, Sec. V.

as markets in which to buy or to sell, other expectations would, of course, follow. If the cyclical process is general, in the sense that all the countries that trade with each other display a cyclical movement of their own, relations become much more complex. In the simplest case in which the cycles are synchronous and all innovations national, *i.e.*, such that they do not directly affect, by rivalry or complementarity, foreign industrial and commercial structures, effects on exports and imports become a question of relative intensity of phases. But if direct interference with foreign industrial processes superimposes itself on these effects, we get a rich tableau of possible cases, development of which seems to the writer to be one of the most important of the reforms of which the theory of international trade stands in need.[1] The reader should experiment with this suggestion.

We will confine ourselves to observing that although, in general, a behavior of import and export series must be expected to result from this which at first glance may seem erratic, yet conditions and relations of any given country are sufficiently stable for sufficiently long periods to make it possible for us to get along in many cases with quite simple theoretical patterns. This stability shows, for example, in Professor Taussig's famous study on British terms of trade by the almost perfect inverse association of the variations in the Board of Trade's wage index with the variations in net barter terms (equal to ratio of price index of imports to price index of exports).[2]

From the standpoint of a central bank, that part of international commodity movements which comes about in response to changes in cyclical phases is in some respects a corrective and in other respects a disturbance of the process with which it has to deal. Any increase in imports in prosperity and any increase in exports in depression would be, and actually often has been, a stabilizing—respectively, restraining and supporting—influence. But, in general, the impact of foreign, and the repercussion of the effects on foreign countries of domestic, innovations, prosperities, and depressions will incessantly affect terms of trade, quantities produced and in the course of being produced, employment, credit requirements, and, if we assume unfettered gold standard all round, cash items and reserves, in a way which, whenever international relations are important enough, currently disturbs the domestic situation much as noncyclical or noneconomic disturbances would. The point to be made stands out still more clearly if we assume, first, that the domestic banking system also contributes to financing the foreign parties to the trade or

[1] This has been recognized and to a considerable extent accomplished by Mr. Spencer Pollard in an unpublished manuscript.

[2] The change in Great Britain's foreign trade terms after 1900: *Economic Journal*, March 1925, see chart on p. 6. For this country, see C. J. Bullock, J. H. Williams, and A. S. Tucker in the *Review of Economic Statistics*, July 1919.

else a foreign financial center contributes to financing the domestic trade, and, second, that the trade in every individual commodity or group of commodities acquires an inertia of its own, which in the short run makes it all but independent of what happens to the trade in other commodities or groups of commodities.[1] Three things may ensue in consequence: the domestic business situation may acquire a complexion completely at variance with the phase of the domestic cycle—foreign war demand may, for example, turn a depression into a violent boom; the state of credit may be at variance with the actual business situation prevailing; and the central bank may be unable to act in the way in which its diagnosis of the domestic situation would otherwise induce it to act—it may find itself dependent on conditions in some foreign country. It is at such junctures—which mere interaction of national cycles might produce—that central bank action is most nearly "initiative" with reference to the domestic situation.

2. But this analysis is inadequate—and so, in this respect, is the general theory of international trade—because it bases international relations on commodity trade, which in turn harks back to primitive barter and to which financial transactions are in principle ancillary. We need not go into the question how great the sector of reality is or was for which this model could be considered to be satisfactory. For the great mass of transactions that make up the commerce of nations in the capitalist epoch it is clear, however, not only that the stage has at any given time been set for them by the cyclical process of evolution, but also that priority in the mechanism of economic relations between nations belongs not to trading but to finance. It would be truer to say that modern commodity trade followed and complemented capital transactions than that the latter arose out of and complemented commodity trade. Selling presupposes lending or "capital export" in other forms, and commerce develops within environments first created and incessantly reshaped by entrepreneurial and capitalist ventures.

For our purpose it is sufficient to consider the effects of capital movements on the cyclical situations and policies of banks, especially central banks. We distinguish long-term and short-term transactions and again transactions which arise from the business sphere—hence mainly from our process—and transactions which do not—mainly public borrowings, which

[1] This is the element of truth in the statement that commodity trade, even if the only form of international economic intercourse, need not balance, because it depends on the wants of the trading countries for one another's products. No defense of this statement, which in most cases is indicative of a failure to grasp the elements of the theory of international trade, is intended here. But if we make the assumptions that are necessary in order to enable us to accept the classical description of an equilibrating mechanism acting on incomes and prices through gold movements, we readily perceive the possibility that its working may produce an otherwise unmotivated slump or boom.

we assume to be independent of the cyclical process, although this is no more than an expository simplification—and which hence impinge on money and open markets at random. Suppose that a banking house, say, in the London of the late nineties, floated a bond issue which was to finance, for example, electrical enterprise in Argentina, that subscriptions were partly financed by bank loans, and that—in order to relieve our argument from a few obvious propositions—the proceeds were intended to be spent in the borrowing country. The borrower acquired a balance in London and could, if he had wished to, have acquired the balance in Argentina—which was, under our assumptions, what he really wanted—by converting the English balance into notes of the Bank of England and these into sovereigns which he might have shipped and deposited with his Argentine Bank. Further assuming that the transaction was big enough, his spending would have imparted an impulse to the business situation in Argentina which, in turn, would have supplied the reason why, on its access of cash, the Argentine bank would have been not only willing but also able to expand its loans, and so on. But in England such a transaction, or a sufficiently important bundle of such transactions, might have brought down the credit structure by suddenly enforcing violent contraction. It is true that foreign borrowers could not have hoped for attractive conditions, or issuing houses for success, in a situation that was already tight for other reasons. It is also true that member banks, since they were normally not loaned up, and the Bank of England, which always kept surplus funds, would, in general, have been able to mitigate the shock. In reality, moreover, our borrower would not as a rule have wished to spend all the proceeds of the loan at home. Even if he had, he would not have drawn gold as assumed, but would gradually have sold exchange on London. Equilibrating effects on the preexisting commodity trade would eventually have worked themselves out through changes in incomes or in incomes and prices. The preexisting commodity trade itself and its financial complement always contained sloppy nooks and crannies. Assets which the lending country owned in the borrowing or other countries could have been drawn upon to some extent. Thus, the process worked on lines all of which were studded with additional shock absorbers.

But the facts will remain, first, that during a period of indefinite length a net disturbing influence on the lending country would almost unavoidably have been exerted by such transfers on capital account, since there was no equilibrating mechanism that would have been fully effective, except in the long run; and, second, that the disturbance was in this case due to the international gold standard—which, contrary to fact, we assumed also for Argentina—for without it Argentina might have done just as well with a corresponding volume of domestic "infla-

tion" as she did with the gold. Hence, the gold standard, whatever its merits or demerits may be in other respects, here created a problem by throwing on the central banks of gold countries a burden that did not arise from but interfered with their own economic process. No great importance is claimed for that type of international transactions; but an element of what the example was intended to stress entered into almost any, and the consequent situations enforced much more initiative action by the central banks than any that could conceivably have arisen from pure commodity trade. We may now add issues of foreign governments[1] —which in the time of economic liberalism were not always dependent on the consent of either the central bank or the foreign office of the lending country, and which sometimes created balances that put the debtor temporarily in a position of considerable power—and repercussions of foreign disturbances of both economic and extraeconomic nature. It then becomes still clearer that a capitalist country's financial and business situation was at any time the result of a national (cyclical) and of an international component, which were largely independent of each other as to causation and, hence, likely to combine in an erratic way.

The very logic of a central bank's position and its own interest made it imperative to try to coordinate the two, *i.e.*, to protect the domestic process from being upset by international transactions and disturbances without impairing the foreign business of the nation, and in particular to manage, if possible in advance, those states of liquidity and stringency in the market which under the circumstances were not infrequently out of step with the phase of the domestic cycle. It is but commonplace to say that the endeavor to do this—under the conditions set by the gold standard—became the chief motive of central bank policy, in England understandably more than anywhere else, and that the struggle of central banks for control over the money market (and for the freedom of action such control would entail) was also chiefly motivated by it. This commonplace is, however, not without diagnostic value, in view of the emphasis put by so many economists on the role that central banks do (or ought to) play in the cycle per se. This is, as we have seen, not the crux of the matter. But owing to the presence of that other component, monetary management of an entirely different type and of much larger scope imposed itself nevertheless—in the heyday of *laisser faire* -- and would have imposed itself, though to a lesser extent, even without the strain put on the working of the gold standard by what we have called (Chap. VII, Sec. E) neomercantilist policies. Moreover, it was this

[1] In markets smaller than the London market the current operations of foreign governments arising both from their long-term financing and from the trade in commodities were sometimes a source of major trouble. The operations of the Russian government in Berlin during the tenure of office of Wyshnegradsky and Witte afford instances.

component that made gold movements so important to central banks. The inflows and outflows attributable to the cyclical component would, in themselves, have been a very minor consideration. But gold movements induced by international capital transactions were not only symptoms of a lack of coordination of the two components but possibly dangerous in themselves. They so regularly called for action that it was easy to draw the conclusion that all the central banks minded was their reserve.

But the art of central banking precisely consisted in minding the nation's business and in so steering between the possibilities of catastrophe in domestic affairs and of discomfiture in international affairs that the compromise would be tolerable to both. Considering that, owing to England's huge capital exports and international interests in general, the smallest mistake could at times have produced disastrous consequences, actual performance, working with so small a gold reserve, was truly remarkable. The resulting irregularities in the behavior of foreign exchanges and gold movements, neither of which displays consistent cyclical patterns, cannot be here discussed. A few remarks on various procedures chosen by the Bank of England will, however, suffice to give a rough idea of the extent to which we must be prepared to find deviations from expectation based upon our model in monetary and banking series. It is clear from the outset that these deviations cannot, except temporarily, have been very important, because otherwise our interpretation of those series by means of that model alone could not have accounted for general contours as it did. This in itself testifies to the success of the Bank. For it implies that the Bank succeeded in managing external disturbance while retaining freedom to act with respect to domestic situations according to the principles discussed in the preceding section.

In the first place, it has to be recognized that what foreign financing primarily imposed was increased caution and the necessity of preventing liquidity from engendering tightness. This, together with the fact that in a system, which works its funds so scientifically, open-market rates will, whenever the situation of the moment permits it, immediately tend to fall to a minimum, explains why the action of the Bank was almost always in the direction of steadying or raising open-market rates and why controlling the open market came to mean tightening it. This did not necessarily mean that it wished to make money dearer for domestic business. On the contrary, measures were sometimes taken to avoid that when action on the latter was not cyclically indicated, as, for instance, during the crisis of 1907 and in the notable case of 1910.[1] Tightening the

[1] The simplest way to acquire such grasp of the matter as can be acquired from reading, is to peruse the volumes of the *Economist* and the *Statist*. But the comments offered in both, especially the former, however sound from the standpoint of a world that was resolved to play the capitalist game, should not be uncritically accepted.

open market without tightening the money market (in our sense), or adjusting liquidity to the ruling cyclical phase, may, in fact, serve as a formula by which to express one type of those moves by which the Bank of England—and similarly also the Reichsbank—attempted to coordinate the two components distinguished above. Undesired pressure on domestic business was no doubt exerted all the same, but to an extent only which in the light of the analysis of Chaps. XI and XII and of the preceding section cannot be held to have produced any major effects.

In the second place, it is easy to see why, as far as central bank policy aimed at coordination in this sense, measures as to bank rate[1] were distinctly secondary to open-market operations and to a peculiar kind of suasion. The Bank borrowed in the market—or from the London banks directly so that, their loans to the market being curtailed, the latter was driven into the Bank[2]—or sold spot and repurchased on account, or sold—much more rarely bought—outright, primarily in response to conditions that arose from the international business, in order to be able to deal with the domestic situation on its merits, although, of course, in many cases both classes of considerations pointed in the same direction. The peculiar kind of suasion consisted in securing the cooperation of individual holders of big balances, such as India House or, for a time, the Japanese government. In the paradigma above discussed one of the first things which it would have occurred to the Bank to do would have been to convey to the Argentinian concern the impression that the Bank had plenty of means to make things in the future more or less comfortable for it, and that it was just as well not to withdraw gold in an inconvenient way or to create, by lending in the open market, a state of liquidity the Bank did not wish to see. The gratitude of the Bank was an asset that it may have paid to acquire at the price of some sacrifice of interest.

In the third place, if the Bank merely desired to strengthen its own position without interfering with domestic trade at all, the device of varying the purchasing price of gold was resorted to with considerable success. Finally, there was the possibility of special arrangements with foreign central banks, particularly the Bank of France. A well-authenticated instance is afforded by the two transactions, the one with the Russian Bank (*i.e.*, the Russian government), the other with the Bank of

[1] Those measures, in turn, consisted in manipulating not so much the official rate as the rate on advances or in rediscounting at a rate higher than the official one and in similar devices. All of them amounted to discrimination with respect to purpose, which on a few occasions at least was also resorted to directly. Cases of the last-mentioned type illustrate our argument particularly well. For it was foreign paper—American, especially—or paper serving foreign purposes, that was discriminated against.

[2] This, for example, was done in December 1905, when it was intended to put on brakes also in the domestic business; see the *Economist's* annual survey of 1905, where it is, however, stated—incorrectly, as the writer thinks—that this was a "new departure."

France, during the Baring crisis. Others are more doubtful.[1] For us only two things matter: never was such a measure actually taken or "suspected" except in connection with the international component of English situations, and in each case the motive was to protect the working of the domestic business organism from being disturbed by foreign disturbance or by repercussions of foreign disturbance on English finance, which is the reason why our series were not more affected; and there is no justification, either for the patriotic irritation displayed by the *Economist* and some English writers at the suggestion that that measure was taken several times, or for the opinion of other writers that it each time spelled a breakdown of the prewar banking policy. In the internationalized world of the free gold standard, borrowing by one central bank from another was a perfectly natural thing to do and nothing to be ashamed of.

Management of the international component, however, was so successful only because there was the powerful wall of short and semiliquid claims on foreign debtors that sheltered the English structure. Without it, that structure could never have been worked on such small margins of safety or by means of such delicate adjustments. This mass of claims—Mr. Hartley Withers estimated it in 1909 at from 150 to 200 million pounds—which was currently turned into cash to be presently reinvested almost anywhere within the gold area, responded to the Bank's slightest move very much more promptly than foreign-owned balances would have done, facilitated great capital transactions, supported foreign business, mitigated domestic stringencies. Because of its presence, tightening the open market—raising open-market rates—not only regulated but, by drawing gold, eased situations. Similarly, cyclical increase in bank rate had not only restrictive but also relieving effects,[2] and incidentally—it is quite misleading to make this the center of the matter—turned unfavorable exchanges, as a rule, with the utmost ease. Hence, we cannot be surprised to find that a general belief in the effectiveness of bank rate grew up among bankers and economists which, without this short capital situation, it would be difficult to understand. It is more astonishing that

[1] Explicit arrangements, however, were not always necessary. It is easy to see that, in some cases in which "assistance" might have been thought desirable, it would at the same time have been to the interest of foreign bankers' banks to behave in a way that would amount to a timely redistribution of gold reserves. The Bank of France, with its strong aversion to variations in its rate, had a particular motive for it. Whether the "help" was extended to the Bank of England or to the market is immaterial. English paper was actually taken, and gold released, by the Bank of France in 1906 and 1907, and this eased the situation and prevented further rise in bank rate. Whether this was done by arrangement or not is not particularly interesting.

[2] The latter were probably more important than the former. Though the danger-signal effect must be borne in mind, the Bank had, as we have seen, not much to do with stopping normal booms. The classical theory of bank rate exaggerated the importance to general business of moderate variations in rate as much as more modern theories do.

so many people failed to see the dependence of that effectiveness on the historically unique technical position of the London market and, instead, tried to explain it by a perfectly general—and unrealistic—theory. This theory, on the one hand, greatly overstressed the influences which bank rate can exert on foreign exchanges and gold movements through successive effects on volume of domestic transactions, volume of deposits, price level and incomes, balance of international commodity trade. On the other hand, it never succeeded in properly defining the places that open-market rates and reserve proportions hold relatively to each other in the rational schema of central bank policy.

The presence of that light cavalry of English finance then explains why both bank rate and gold movements proved, comparatively speaking, so little disturbing to business and incidentally to the course of cyclical phases. As regards foreign exhanges in particular, a cyclical regularity was established by its action, which should be noted in passing. In the absence of any chances, risks, and costs incident to the transfer of short balances, the short-capital mechanism would obviously have tended to equalize comparable open-market rates in different countries. As between countries of different monetary standards, the element of risk and chance was dominant. But as between gold-standard countries, variations of exchange rates were confined within gold points. Hence, it was possible for the operating banker to calculate maximum risk and chance and to compare the result with the given difference between comparable rates ruling in different countries.[1] Given the responsiveness of the short-capital mechanism to fractional gains, this would not only limit possible deviations from equality of market rates,[2] but also tend to enforce parallelism of variations in those differences and variations in rates of exchange. This expectation is disappointed as regards the relation between London and New York, but comes out very well as regards the relation between London and the European gold-standard countries, especially Germany and France.[3] Still we cannot expect that parallelism

[1] There were, however, several difficulties about doing this. We are assuming that there were no risks other than those implied by the possible range of variation in rate of exchange. If we take the highest grade bills only, this assumption works under normal conditions. But it fails in any really serious crisis and also in the presence of political fears. Moreover, gold points were somewhat variable, both in time and as between banks, some of which may have had opportunities to ship more cheaply than others.

[2] As far as the writer knows, this "solidarity" between the open markets of gold countries was first investigated by N. E. Weill, Die Solidarität der Geldmärkte, 1903, though the main facts about it were, of course, familiar to all writers on banking and finance.

[3] See the standard work on the subject, H. Neisser, Der internationale Geldmarkt vor und nach dem Kriege, *Weltwirtschaftliches Archiv*, April 1929, especially charts on pp. 187 and 189, also, for what follows the chart on p. 221, which compares the curve of the distance between the London-Berlin exchange and the difference of market rates with the Thomas index of English business conditions.

to be perfect. There are transactions that are less sensitive, or even not at all sensitive, to those differences. We have to do, moreover, with a surface mechanism which cannot always control the influence of the more fundamental factors behind it. Finally, anticipations as to the behavior of exchanges in the relevant future will work differently on different levels as well as in different seasonal and cyclical situations. It has, in fact, been shown by Professor Neisser that the graph of the distance between the curves of exchange rates and of the difference between market rates displays fairly regular cyclical properties, which are what emerges behind the apparently erratic behavior of exchange rates considered by themselves. It does not follow that we should expect any consistent short-run relation between foreign exchanges and domestic market rates alone, or that we should be able to predict any definite effect from a given absolute change in domestic bank rate alone, however completely the Bank may succeed in making it effective. The opinion which it is said prevailed in the city and in support of which Goschen's authority might be invoked, *viz.*, that an increase of 1 per cent in bank rate would, and a smaller increase would not, turn unfavorable exchanges, was therefore not exact.

3. In itself, the mere fact that there was in the world of prewar capitalism one gold market which in importance and accessibility overshadowed all others[1] would not greatly matter for our purpose. It would merely offer an occasion for the remark that, first, because of the "autonomous" movement of gold from the countries which produced it, and second, because of the special transactions effected by central banks or other monetary authorities, no expectation as to cyclical behavior can be formed with any confidence. The cyclical migrations, which the units of a constant stock of gold could have been expected to display under a regime of unfettered gold currency and in the absence of any regulatory interference, are too clear to detain us.[2] But all the more relevant is the further fact that the gold market, toward which, with the partial exception of the production of the United States and Russia, practically all newly produced gold gravitated, was located in the same country and controlled by the same financial organism that also controlled the international short-loan fund. Because of this, England was in a position, by extending or restricting short credits, to enable operators in other countries to buy gold or else to prevent them from doing so, not absolutely

[1] There were many local ones all over the world. In Paris a price was regularly quoted for bars which was distinct from the gold premium charged by the Bank and from the price of gold exchange.

[2] This does not mean that they do not offer any problems, but only that the problems relevant to our argument can readily be solved if we amend the classical theory of gold movements by a theory of the short-balances mechanism and stress differences in interest rates rather than differences in pricelevels.

but to a considerable extent. As far as the Bank of England controlled the domestic open market, it may, therefore, be said to have controlled international gold movements and to have—indirectly—acted as the bankers' bank of bankers' banks. This strengthened its position and its ability to mitigate the impact of foreign disturbances on domestic business situations in a way not open to any other central banks. The Reichsbank, the Bank of France, and other central institutions aimed at similar freedom of action by other means. Some of these were also adopted by the Bank of England. It was, in fact, a very natural discovery to make, that actual or expected gold movements might be influenced directly and that this method would serve to handle a class of short-run difficulties as effectively as measures which, besides doing this, would also produce undesired effects. But while other central banks began at the turn of the century to head toward the gold-exchange standard, which meant, though they may not have been aware of it, moving away from gold-standard ideas, the Bank of England, up to the war, never did anything[1] that pointed in that direction. All it attempted to do was to smooth the working of the unfettered gold standard, which for the time being was clearly in the interest of England and which remained her long-run policy. It, therefore, confined itself mainly to acting on gold points by varying its price for bars and foreign coins, refusing to sell bars, giving free advances on gold imports, and so on, and in all normal cases continued to rely on its influence on money rates. To insulate the domestic price level was no part of this policy. To stabilize it was part of the policy only in the sense that—never mind what the Bank's leading men may have thought or said—it tended to mitigate temporarily the impact of noncyclical factors.

In the late eighties and the early nineties—from 1879 to 1888, total coin and bullion in the Bank of England fell (with fluctuations) by about one-third, while total deposits in the United Kingdom rose by, roughly, one-third—the problem was one of "scarcity." It was during that time, as far as the writer knows, that the Bank first resorted to gold policies, which, however, proved particularly effective during the troubles of the early nineties.[2] What would have happened if no increase in gold production had occurred is easy to guess: new methods of economizing gold would have been resorted to. As it was, South African gold reversed the situation. Its *modus operandi* is highly instructive. The Bank at first simply discontinued its gold policy and allowed the new gold to accumulate in its vaults—its gold stock increased rapidly from 1891 to 1895, and

[1] Fulfilling its legal obligation to sell sovereigns in minimum-weight coins was as near as it went to refusing to play the orthodox game.

[2] In 1893, when the inflow of gold had already set in, the price of gold in the London market rose to 3 pounds, 17 shillings, 10.8 pence per ounce standard, while bank rate stopped at 4 per cent.

its reserve proportion moved, substantially, parallel to it[1]—or to flow through the London market into other banks[2] and to other countries, *while the price level continued to fall.* The effect on open-market rates is as well marked as we should expect, and was temporarily intensified by the payment to Japan of the Chinese indemnity, which involved the transfer to London in October and November 1895 of 13 million pounds raised by the Chinese government in Paris. But it should be obvious that even this effect of the new gold cannot be interpreted in terms of monetary factors alone and that it was so much in evidence only because of the cyclical situations on which the new gold happened to impinge. For, in the prosperity that followed, it entirely disappeared, and rates stiffened in spite of the swelling tide of gold production. Prices, on the other hand, then began to rise. They probably rose more than they would have done in the absence of such a tide, exactly as money rates had no doubt fallen more than they would have done in the absence of it. Neither effect is being denied here, but neither was strong enough to assert itself except in cyclical phases favorable to it. The writer does not see that this interpretation leaves any major fact unaccounted for or that there is in the sequence of these events anything to contradict our views about the cyclical process, its relation to monetary factors, and the facts and possibilities of central bank policy.

To complete this part of our argument, we will notice that even before prosperity (in our sense) had set in and while revival (in our sense) was in full swing, with low rates, low prices, and great activity in building and in trade in general, the American troubles of 1896 and the incident drain of gold drove the Bank back upon raising its selling price for bars. It also raised its rate, which, in a very liquid market, it proved extremely difficult to make effective. The latter measure, not easy to understand from the situation in which it was taken, was ratified by events, for that

[1] See W. E. Beach, British International Gold Movements and Banking Policy, 1881–1913, 1935, p. 71.

[2] This was then, but especially later, facilitated by what may be called the Gold Scare. Ever since the publication of Bagehot's Lombard Street, financial writers had been preaching that the "gold basis" of the British banking system was too small. These preachings began to take effect in the late nineties, and the great London banks used the opportunity afforded by the new plethora of gold to build up gold reserves of their own. Whatever we may think of the sentiments voiced in Sir Felix Schuster's addresses, for example, and of the reality of the "dangers" incident to smallness of the "ultimate reserve," the scare certainly helped to produce, together with the demand for gold from the countries which at that time went on the gold standard or made preparations for doing so or simply wished to broaden the basis of an already existing gold currency, much the same results as could have been expected from an international policy of partial sterilization of the new gold. This is one of the reasons why it is not easy, on the one hand, to interpret the gold movements of that period and, on the other hand, to estimate the net effect of the new gold on price levels.

situation shaded off into a burst of prosperity the following year when the price of bars was raised to £ 3-18-½, but bank rate to not more than 3 per cent. The course of events in America and Germany, the requirements of foreign financing and boom conditions at home, account for the use of gold devices *along* with bankrate in the next two years, during which the Bank's gold stock fell to the level of 1894. Again, American troubles and war finance account for their use *instead* of additional manipulations of bank rate, from 1900 on. As the Kondratieff wore on and gold continued to flow in, the Bank's position grew stronger of itself; and toward the end of the period, protective gold policies fell almost into disuse. There are, in fact, traces of a preoccupation with the opposite problem, *i.e.*, the problem of preventing the gold stock of the Bank from increasing to amounts the very sight of which would have encouraged excesses. It was, however, kept, in its yearly averages, at or near the 30 million level until 1913.

No such gold management was, of course, possible in the United States, where, in consequence, we find during the sixteen years preceding the war much more parallelism between national bank deposits and the total monetary gold stock. The German case is for our purpose less interesting. The Reichsbank was mainly concerned with strengthening the bases of the German standard. It was a steady buyer of gold from the first, acquiring over 434 million dollars of it between 1876 and 1893. In the times of prosperity that followed, such gains as were made were more than absorbed by circulation. But from 1907 on, the accumulation of a larger reserve tended to become an end in itself, and all other considerations were subordinated to it. By purchases and the use of gold-exchange standard and other devices, among which the substitution of the *Reichskassenscheine* for gold in circulation may be mentioned, it succeeded in acquiring the ample gold outfit with which it entered the war.

D. Stock Exchange Series.—These series or phenomena described by them have been dealt with at various stages of our argument. We return to the subject merely in order to round it off, particularly with reference to banking and bankers' banks' policy. For this purpose, it is convenient to define the stock exchange as that market which deals in bonds and shares. Another part of the market of "capital values," the realty market, will not be considered here in spite of its considerable cyclical importance.

Although the stock exchange is, as has been stated in Chap. XII, really a part of what in the widest sense we have called the open market, it will now be looked upon as distinct from it, though communicating with it. We know where the money comes from that buys the various "branded articles" that constitute the "commodities" of this very imperfect market. It comes, first, from the "surplus funds" of banks,

lending to the stock exchange being the most important method of banks' temporary investment. Second, it comes from nonbanks (although often through bank loans on account of others[1]), domestic business concerns, and foreign banks and capitalists, who also want to invest funds temporarily—the latter source sometimes enabling member banks to thwart bankers' banks' policies, and the stock exchange to thwart member banks. Third, it comes from "investors"—from the savings of households and from the funds of nonbank firms and of banks which also may wish to invest permanently. Finally, banks directly finance transactions of both speculation and investment by collateral loans to customers, which, however, must not in general be identified with financing speculation or households' investments although we now shall tentatively assume that this is admissible in the case of the collateral loans of New York banks. Though all banks lend for stock exchange purposes, their relation to and position in the stock exchange varies, as we have seen, very much in time and as between countries, and this difference does not disappear if we include among banking firms, as we really ought to, brokers and jobbers or Paris *agents de change*. They still essentially remain middlemen and never have the position of German banks. The difference between a speculator and an investor can be defined by the presence or absence of the intention to "trade," *i.e.*, to realize profits from the fluctuations in security prices. But since investors also borrow and since they may at any time turn into speculators, this does not overcome the difficulty of distinguishing speculative from nonspeculative transactions. More useful for practical purposes is the criterion of the margin account.

1. The shifting of old issues between speculators, investors, and banks, for a variety of purposes with which we are familiar and which form an essential link in the mechanism of credit creation, constitutes one group, the placing of new issues with speculators and investors, another group of transactions relevant for our purposes. Disregarding, for the moment, the latter group, we will first consider the role in the cycle of transactions in "old" stocks and bonds and of the financing of these transactions. Needless to say, the phenomenon would, in the absence of external disturbances, owe its existence entirely to the cycle, and must obviously be expected to be one of the most regular of its features, so much so that it would be hard to find instances of cycles that would not display it. It is clear, moreover, that the dissaving implied in living on gains from speculative or nonspeculative transactions of that kind[2] has much to do with the amount of consumers' spending in, and

[1] The role of Temporary Investment and, in particular, of Brokers' Loans will be dealt with in Chap. XIV, Sec. F.

[2] The gains of speculators include, no doubt, an operational element which is not a true capital gain but of much the same nature as any other return to personal activity—for

with the psychic atmosphere of, prosperity, and that, similarly, losses in recession or depression have much to do with the reduction of consumers' spending in, and with the psychic atmosphere of, recession or depression. Nor need we stay to show how increases and decreases in the value of collateral may be responsible for loans (also for business purposes) which would not have been granted or would not have become endangered without them. As everybody knows, this may be an important element in the banking situation of "crises" and in vicious spirals in general.

Peculiarities of the pricing process on the stock exchange and the effects of speculation on the situation of member and bankers' banks and on the financing of business are conveniently dealt with by reference to the time-honored question as to whether "the stock exchange absorbs credit."[1] The naïve argument in favor of an affirmative answer has been met, and for practical purposes can be met, by pointing out that, normally though not in times of speculative manias, "funds" lent on the stock exchange would, to a great extent, be otherwise unemployed. Our previous analysis of the behavior of banks in cycles lends some support to this. The fact that in the presence of high renewal rates, banks and other lenders turn from the commercial-paper market to the stock market does not substantially invalidate that reply, nor does the further fact—the importance of which greatly varies according to the technique of speculation in different countries—that anyone who wants to speculate must "buy himself in," which may imply withdrawal of existing balances or facilities of creating them from other uses, without necessarily releasing an equal amount at once.

More fundamental is it, however, that rising stock prices are not in the same way associated with increasing use of balances as are rising prices of ordinary commodities. Obviation plays a greater role[2] than it can play in the latter case, in New York, particularly, since the foundation in 1919 of the Stock Clearing Corporation. Moreover, brokers' loans induce no cashing of checks and, consequently, no loss of cash to circulation. Again, most of that portion of brokers' deposits that is derived from loans need not actually appear as deposits at all, because it is entered directly under the banks' certified checking accounts, against

instance, the professional income of a lawyer. Spending this on consumers' goods is not dissaving. There is no need, however, to emphasize that element here.

[1] There is a large literature on this question. We will only mention Professor Machlup's Börsenkredit, Industriekredit und Kapitalbildung, 1931; R. N. Owens and C. O. Hardy, Interest Rates and Stock Speculation, 1925; Thomas Balogh, Absorption of Credit by the Stock Exchange, *American Economic Review* for December 1930; an interesting discussion by Professors Cassel, Spiethoff, and Hahn in the *Frankfurter Zeitung* in May 1927; and R. Reisch, Rückwirkungen der Börsenspekulation auf den Kreditmarkt, *Zeitschrift für Nationalokonomie*, 1929. The question will be taken up again in the next chapter, sec. F.

[2] See Professor Machlup, *op. cit.*, p. 79, *et seq.*

which no reserve is required.[1] These statements may, with proper modifications, be paralleled for European stock exchanges.

But the essential point, which really arises out of the same circumstances and also helps to account for obviation's being so easy in this case, is this. What we have termed the efficiency of money bears a relation, fundamental to any theory of money, to institutional periods of payment, which, in turn, bear a relation to the timing and periodicities of economic processes. There is no such time element in transactions on the stock exchange, because there is no process to go through. Institutional arrangements and the limits of physical possibility still produce a minimum period, but it might conceivably be one of minutes only. Hence, there is almost no limit to a "price level" that a given "fund," however small, may "support." Moreover, while a commodity must, at the price determined in its market, move over its track through the economic organism, there is no such necessity for stocks. If, in the case of a commodity, market price is such as to prevent it from starting on, or completing, its course, stocks of the commodity accumulate, which in themselves are irksome maladjustments and must eventually be liquidated. This keeps each price ultimately in line with other prices and in subjection to the monetary ligamen. But in the case of, say, a common stock, the fact that at its price it cannot "move" does not necessarily spell an untenable situation. The people whose action and estimation is responsible for that price may be willing to keep it, and normally can do so. The stock need not move to any definite spot in the economic organism, in order to fill its economic function. And the mere fact that a small group of people entertain an irrationally high opinion about the value of a stock can, with very small transactions, raise it to indefinite heights without either absorbing any funds or credit facilities or eliciting pressure from monetary magnitudes. This is the great difference between pricing on stock and pricing on produce exchanges.[2] Technical qualifications apart, into which we need not enter, such as the holding of war chests by pools and individuals, it is, therefore, true that stock speculation does not absorb money or capital or credit in the sense usually implied by this phrase.[3] New issues, of course, do "absorb funds," but only to release them, unless the proceeds be applied to the repayment of bank loans.

[1] H. Rogers, Effect of Stock Speculation on the New York Money Market, *Quarterly Journal of Economics*, vol. XL, p. 453.

[2] It has been pointed out that a similar peculiarity exists in many cases of commodities in the proper sense of the word, such as pictures by old masters and real estate. This is quite true, even though certain other characteristics of the stock market are absent. But this fact does not constitute an objection—it rather illustrates our meaning.

[3] This view, together with some of the propositions that are to follow, is often taken to imply "friendliness" to, or an intention to "defend," stock speculation. In order to dispel any such suspicion, the writer begs leave to state that on moral, political and cultural

2. In analyzing the pricing process on the stock exchanges, another consequence of the fact that the "commodities" of this market are, by virtue of their economic nature, held rather than moved must be taken into account. A market in which this is the case and in which the pressure of the monetary ligamen is not present in the same sense as it is in markets of ordinary commodities, in which, moreover, stocks are to a great extent held for a rise but, serving as collateral, have to be liquidated in case of a fall in price, in which "supply" will *normally* increase in consequence of a fall, decrease in consequence of a rise, or also vary without any variation in price—such a market is not likely to conform to traditional ideas of the behavior of supply and demand. If it does not behave more erratically than it does, this is due to the fact, easy to verify, that the varied responses which a change in the situation elicits in part balance each other. The resulting tone or tendency is, as a rule, so clearly marked, because it is, as soon as discerned, acted upon by speculators. In a sense this is true of any market; but for the reasons stated above, it holds for no other market to the same extent.

Therefore, explanation of that tone or tendency has been rightly felt to be a distinct task, *i.e.*, a task not only distinct from the explanation of market phenomena in general but also of the phenomena in other speculative markets. Speculation in raw material futures is, for instance, much more likely than speculation in common stock to display those features that can be listed under the traditional and self-explanatory headings; insurance, arbitrage, and steadying price over time. Carrying temporarily stock that people do not, or do not yet, care to carry permanently, and sending monetary capital into the firing line come nearer to a description of what speculation in stocks actually does.[1] What follows refers primarily to the behavior of stock prices. The behavior of bond prices has been dealt with in the preceding chapter. But it must be remembered that the pricing of low-grade bonds involves a speculative element, which will tend to make their prices behave much like prices of stocks.

Since stock prices have more degrees of freedom than other prices have, and since financial groups—pools and others—confront a public very much more excitable and very much less intelligent than the constituent individuals are in their ordinary business pursuits, it is tempting to stress mere mass psychology, on the one hand, and mere abundance or

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grounds he personally welcomes almost any measure in any way hostile to it, regardless of economic consequences. In particular, he would welcome an enactment making speculation a misdemeanor for the members of certain professions.

[1] The theory that no concern is a permanent source of net revenue allocates, however, as will be clear on reflection, to trading in stocks a significance within the capitalist process which is additional to the "functions" of it that enter into traditional formulations.

scarcity of funds, on the other. While there cannot be any doubt about the presence of either element, neither of them makes, by itself or jointly with the other, a satisfactory explanation. As regards the first, there is, of course, much more scope for waves of optimism and pessimism on the stock exchange than there is in industrial and commercial business, and it is more nearly true for the former than it is for the latter that anticipations may temporarily produce the expected result. But even manias have their starters, and we must not judge by manias only. It should be added that there has been a slow but persistent change in the behavior of the public, which becomes obvious if we distinguish irrational optimism as to general conditions and irrationality in the choice of the particular stock to speculate in. The scene of 1929, perhaps, differed but little from the scene of 1873[1] or even from that of the South Sea Bubble, in the former respect; but it differed significantly in the latter. In order to choose rationally, a man need not be able to analyze a business situation or the state and prospects of an industry or concern. All he needs to know is what advice or example or current opinion to follow. It remains true that irrational fancy and downright foolish hopes or fears count for much in the short run. But it is no less true that they never provide the motive power of a boom and that they never prevent the real state of things from asserting itself eventually.[2] This real, or objective, state may be decomposed into external factors, cyclical phases, and conditions peculiar to individual industries and concerns. No doubt, the word *expected* may usefully be inserted in each case.

While the above analysis of the peculiarities of stock pricing thus gives some, if limited, support to an optimism-pessimism theory, it rather suggests that less emphasis should be placed on money-market factors than we should infer from the familiar statistical evidence. We have seen in the preceding chapter that small variations in open-market rates made a great deal of difference to the operator in bonds and hence to their prices, but no variations of rates such as currently occur in a normal cycle can possibly matter for speculation in stock. It is, therefore, availability rather than cost of credit that we should look to. But we have seen that, barring new issues, comparatively small amounts will go a long way on the stock exchange. Considerable booms can develop

[1] Even that is not quite certain, however. Foreign buyers in 1929 need not have been unduly optimistic as to American conditions in order to have preferred American stocks to European ones. And if American holders of American stocks failed to sell in time, this does not prove that they foresaw nothing but continuing booms, but only that they did not foresee that the loss from a fall in security prices would be greater than the amount of income tax which would have been due had they sold out.

[2] The stock exchange thus affords an excellent example by which to demonstrate what "psychological factors" and, in particular, "expectations" can and cannot do and in what sense economic reality is independent of them.

on a narrow basis of "cash," and unless banks set their faces with what would be quite unusual determination against the speculative purpose, it is not easy to see how speculation could be starved by lack of funds, though, of course, new issues could. Hence, we shall be inclined to attribute that statistical regularity more to coincidence within the cyclical process—to be explained presently—than to the causative influence of monetary factors, for example, in the sense of the theory according to which funds migrate from industry and commerce into the stock exchange, thereby igniting speculative booms, and then back again, thereby putting a stop to then.

3. Indices of stock prices make synthetic and systematic series descriptive of a primary and consequential phenomenon. These series will, of course, be strongly cyclical, however they may be constructed. *But our model yields no generalization about trend.* Such trends as we find simply reflect historical facts, which must be separately accounted for in each case, and depend on the properties of the index chosen. If, for example, the index expressed average price per dollar of paid-up capital plus accumulation for a number of identical concerns, it would, barring changes in the purchasing power of the monetary unit and in the value of natural agents owned by those concerns, normally go to zero after a period of sufficient duration. If new concerns are currently added and old ones currently dropped, it will not do that, but still need not display any particular result trend in our sense.

Since we do not believe in the dominant role of money-market conditions we shall not expect any strong seasonal variation, although holidays and so on must exert some influence. As regards cyclical variation, three facts must be borne in mind. First, the public's anticipations concerning cyclical phase and its anticipations concerning the fortunes of individual industries and concerns are interdependent and tend, within the short or medium run, relevant to the decisions of speculators and even investors, to point in the same direction. Even an old and ailing concern will in the majority of cases do better in prosperity than in depression. But both speculators and investors are particularly attracted by relatively new—though perhaps not so much by quite new and untried—industries and by the leaders in those industries which carry prosperities. That this is so is clear—railroad, electricity, motor, rubber, oil stocks and dozens of equally familiar instances lie at hand to verify it. But it should be noticed how well this fact illustrates the "function" and also the "rationality" of speculation; for the diagnoses which this behavior implies are in general well verified by objective events, themselves independent of those anticipations. Not, of course, in all individual cases, nor necessarily from the standpoint of the speculator—but even when the latter loses his money, he rarely, if ever, acts on dreams: the developments he counts

upon almost invariably mature, however seriously he may be at fault as to timing.

Second, the stock market is imperfect, but it is freer from friction than almost any other. Decision can be given effect to and reversed with a promptness altogether impossible in industry. Depressive situations may so weaken hands as to force them to relax their grip, even after opinions have undergone a favorable change, but on the other hand, the effects of such a change may be accentuated by the supply being suddenly curtailed when demand revives. Hence, it is natural to expect that upward movements on the stock exchange will, in general and in the absence of unfavorable external factors, set in earlier and gather force more quickly than the corresponding upward movements in business, *i.e.*, often come about already in the later stages of revival when things are beginning to look better every day, with new possibilities showing themselves. Similarly, it is to be expected that stock prices will turn before other indicators, *i.e.*, when in the later stages of prosperity limitations and difficulties emerge and it becomes clear that possible achievements have been fully discounted.[1] Now, in the first situation, interest is low and the money and open markets are normally easy; in the second, interest is high and the money and open markets are normally tight. Some causal significance may be attributed to this relation, particularly if we include the role that monetary conditions will play in the prognosis by speculators or their advisers of what is ahead in business.[2] But the principal explanation is that both stock prices and money rates respond to cyclical phases so strongly that their variations would be regularly associated even if they had nothing to do with each other.

Third, because of that promptness in reaction and also because the self-reenforcing mechanism is so strong in the stock market, we must expect movements to outrun their momentary goals much more than in other markets and reactions to be correspondingly sharp. Even if the market be undecided, this will mean fluctuations—of the sort we called hesitations in Chap. IV, Sec. E—rather than inaction. Moreover, while general business may and often does settle down into recession in a perfectly orderly way, this is hardly imaginable in the case of the stock exchange. Recession means reduced profits and, for many concerns, more or less serious troubles. It gives scope to bear attacks. But even

[1] That view is supported by the observation that very frequently the rise in the leading stocks stops before the top of the market is reached. Speculative interest, realizing that their possibilities have for the time being been exhausted, looks around for stragglers that may still offer secondary chances. That is when the "froth" comes up.

[2] The writer is inclined to believe that the facts that the weekly statements of the New York Associated Banks used to be a feature in the Saturday market and that similar attention was in London and Berlin paid to the statements of the Bank of England and of the Reichsbank, were entirely due to this.

if nothing of this sort ever happened or were anticipated, the mere fact that there is no reason to expect, save in particular cases, any upward movement would suffice to make speculators lose interest in their holdings. Thus the upper turning point or the approach of it is, in this case, likely to mean a crash, which need not greatly affect the general business situation. But although it need not, it often will, both by upsetting the credit situation and by uncovering weak spots. It is easy to carry this argument through spirals and depressions into recovery and to satisfy oneself that in the absence of an abnormal amount of reckless finance and misconduct and often in spite of their presence, bear markets do not last unless coinciding with and independently induced by, depressions in general business. This is perfectly compatible with the influence, previously recognized, which stock exchange events exert on consumers' spending.

For corroboration we return to Chart XXXVI. The fairly marked covariation of railroad stock prices—as long as these were the dominant element, *i.e.*, to the nineties—and of railroad and industrial stock prices with New York loans and deposits, and their strongly marked covariation with New York Clearings[1] should again be noticed first. In both railroad and industrial stock prices the Kondratieff prosperity from 1897 on shows well and so do the Kitchins. The major movements which we observe, however, clearly reflect the Juglars: we see the (anticipating) boom of 1868 and 1869 and then the characteristic slump from 1873 to 1877; then the (also anticipating) boom from 1877 to 1881; the same phenomenon, most regularly repeated from 1885 on; no such precedence for the first Juglar of the third Kondratieff, which may have been due to the aftereffects of 1893 and political factors; but more regular behavior again in the second. This reflects the relation, which according to our analysis should exist between speculation and the investment process. The latter, as we know, dominates the Juglars more obviously than the Kitchins. All series that link up with investment, such as pig-iron production, employment, and so on, display Juglars with particular emphasis. The fact that stock speculation behaves similarly is, hence, of some significance. The reader should again inspect Chart XXXIV, particularly the graph of New Listings, for which speculation paves the way.

Charts XXXVII and XXXVIII substantially tell the same tale. In the first there should be noted the instructive differences that comparison with the American series reveals, among them the spurt in stock prices from 1895 to 1897, strongly underlined by the behavior of call rate, after which they fluctuated around a declining level. The second presents a

[1] See A. M. Matthews, New York Bank Clearings and Stock Prices, 1866–1914, *Review of Economic Statistics* for October 1926, where trend ratios are compared.

picture which is much more, though not quite, similar to the American. German stock prices reproduce the movement of American industrials up to, and down from, the peak of 1872. In reality, however, this veils a difference in behavior, since the German index includes all leaders, while the American index excludes railroad stocks, which in this country, more agreeably to expectation reached their peak sooner, *i.e.*, in 1869. Political events—the Franco-Prussian War—may plausibly account for this difference. The trough occurs in the same year as in this country, 1877, but the subsequent rise already stopped in 1880, the rise of 1888 in

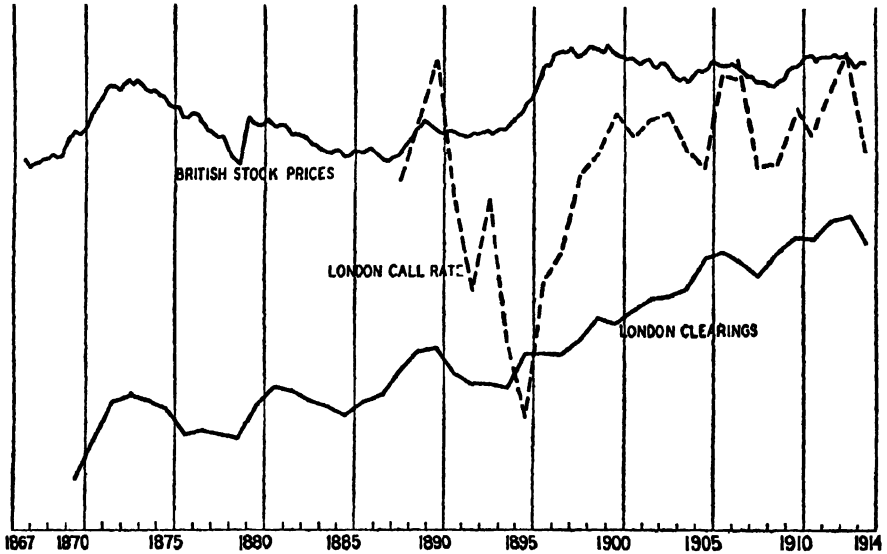


CHART XXXVII.—(See Appendix, p. 1064.)

1889, after which the index falls, preceding the American index to the end of 1892. Our guess that political events interfered with the course of things after 1893, this time in America, is supported by the fact that in Germany a strong upward movement, which lasted through 1898, had already begun in 1894. This would make a very normal case, not at all impaired by the duration of the interval—over three years—by which the stock exchange shadow preceded the form that cast it, *viz.*, the prosperity which we date from 1898. We need only look at the general situation, which may be described as buoyant revival, and at the stock exchange leaders: everything was in fact "looking better every day" and the contours of the achievements in the electrical field unmistakably stood up before everyone's eyes. By the end of 1898, on the other hand, it was not less clear that possibilities were for the moment being rapidly exhausted—more than exhausted—and that the immediate future offered little for the fancy of speculation to feed on.

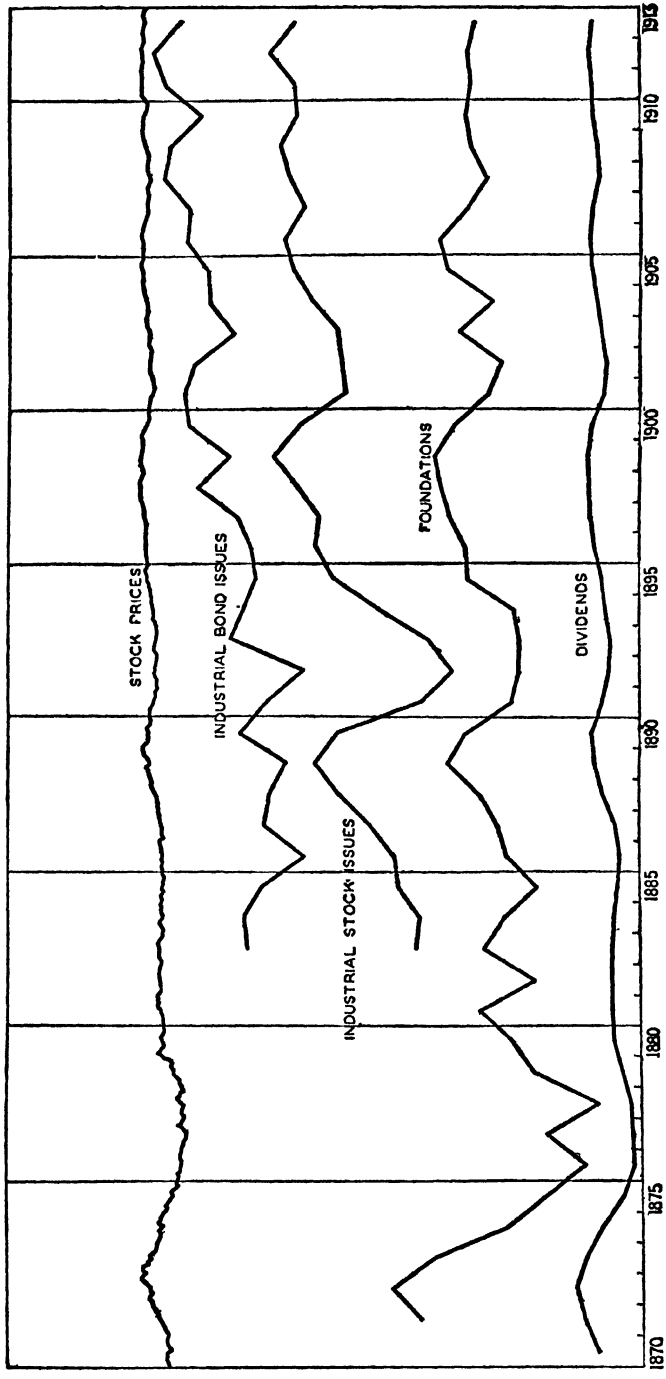


CHART XXXVIII.—Germany (see Appendix, p. 1065).

No undue amount of conscious rationality is by this interpretation attributed to the rank and file of speculators. But it is held that objectively there was method in the madness. In this respect it is also worth while observing how close stock prices come to reproducing the movement of dividends.[1] And both go fairly well with Foundations and Issues of Industrial Stock. While it is unnecessary to dwell on the significance of this fact, a few minor points should be noticed. Foundations and Issues do not display as close a covariation as one might expect; on reflection, however, it will be realized that the former, being of the essence of industrial booms, will cluster at or before the peaks of business activity, while the latter, being tied to the opportunities created by speculation, will cluster at or before the peaks of stock exchange activity. Issues of industrial bonds and issues of stocks should display similar "trends" but opposite fluctuations. The former expectation is verified, but the relation between the fluctuations is less consistent than we might have hoped. A peak occurs in both series in 1911. Juglars show excellently in stock issues, Kitchins rather better in bond issues.

4. In this and in earlier chapters facts and arguments have been presented which suffice to draw the contours of a theory of the relation of banks to stock speculation and to that part of the investment process of which the stock exchange is the scene. We may sum up by stating that even where banks most strictly keep to the principles of classic "deposit banking," considerations arising out of the practice of lending, to the stock exchange and to customers, on stock exchange securities provide a most important link between the prices of the latter and the fortunes of each individual bank; but that where banking of the *crédit mobilier* type prevails and banks directly "patronize" industries, control their financial policy, manage their issues, hold stocks or bonds and trade in them on their own account, the stock exchange may become the pivot of their business. But we will now confine ourselves to the relation of bankers' banks to the stock exchange.

From the proposition that speculation in stocks does not, or not to a significant extent, "absorb credit"—that the stock exchange is not a sponge but a channel—it does not follow that it is a matter of indifference to the central bank. It is obvious that new issues are not. For they precisely supply what it is the function of a central bank to regulate. They may increase the lending power not only of individual member banks but of the banking system as a whole. As we have previously seen, they may, if for foreign account or merely if internationally financed,

[1] Prices of the stocks of individual concerns are also—everywhere—closely associated, though only in the short run, with the prices of the products of those concerns. It would be dangerous to stress this relation too strongly. It points, nevertheless, to the influence of obvious common-sense considerations on the decisions of speculators. The relation is instantaneous, however, and this type of decision is likely to be taken *post festum*.

upset the working of the mechanism of short balances and affect gold movements and the central banks' reserve. Barring this, they always affect the open-market situation. And they are associated with reckless financing. It stands to reason that the central bank cannot be indifferent to that.

But if central banks cannot be indifferent to the volume and the purposes of new issues, they cannot be indifferent to the movement of stock prices, because a boom in these is, practically speaking, the necessary and (almost) the sufficient condition for a boom in issues. Moreover, even trading in old stocks influences business activity—the intensity of the Secondary Wave—through the withdrawal and the spending of speculative gains, and also the general banking situation, especially if member banks themselves are sellers or buyers on their own account. This need not cross and may even help the policy of the bankers' bank, as we have seen. We have, in particular, had occasion to observe that the selling by banks of stocks and bonds may effectively restrain a boom and that their buying may mitigate a slump. But this need not be so. It follows that the untenable theory about speculation absorbing funds may be, after all, the ill-tailored coat of much practical wisdom: though for a different and, in fact, almost opposite reason, there are plenty of motives for bankers' banks to react to stock speculation and to try to fight its excesses during prosperity or the later stages of recovery, and vice versa bear attacks during recession and depression. Success in this may avoid many hitches in the investment process, reduce many plus or minus deviations of current business, remove some of the darkest hues from the picture of "deep" depressions.

The partial analogy that exists between new issues and open-market operations by the bankers' bank suggests that the former may, to some extent at least, be controlled by the latter or, more generally, be regulated by a central bank that keeps a firm hold on the open market. New issues are, in fact, the most important link between stock exchange booms and easy money, and sensitive to tightness. Moreover, there are other and more direct means to the same end which it is and was within the power of, say, the Reichsbank or the Bank of England to use. But acting on the conditions that facilitate or impede new issues is a delicate task. It might prevent financial consolidation in individual points of potential danger or even bar the way to consolidation of an overwrought situation in the banking system and thus precipitate what it is the intention to avoid. In fact it is impossible as a general policy. Some effects on the economic process are, moreover, as we have seen, produced by booms in the prices of existing stock, independently of whether or not they induce new issues. It has, therefore, been at all times the almost universal opinion of practitioners of central banking that the management of

credit would never be fully effective and especially never effective in time, unless stock speculation be acted on directly.

Nevertheless, we see throughout the period under survey very little effort to accomplish this and very poor results of such efforts as were occasionally made. As we have seen in Chap. VII, something was done in Germany, but it was done by legislation and not by central bank action. The reason for this follows from our analysis of pricing in the stock market. Since stock speculation does not absorb funds, it must be extremely difficult to stop or to restrain by any of the ordinary tools of central banking. Bank rate in particular is anything but omnipotent with respect to production and commerce, but it is, within the limits that are practically feasible, almost ineffective with respect to stock speculation: regulative influence on stock prices presents a problem entirely different from that of influencing commodity prices.

CHAPTER XIV

1919–1929

A. Postwar Events and Postwar Problems.—The formidable task of interpreting, economically and sociologically, our own time cannot be attacked in this book. Still less is it within our plan to recommend or to criticize remedial policies or fundamental reforms, or even to enter into discussion of individual measures taken or proposed. Whatever of this the reader may find, explicitly or implicitly, in the following pages, is incidental to an argument the very restricted purpose of which should be borne in mind throughout. That purpose is to answer the question how far the cyclical process of capitalist evolution, as analyzed for the 130 years that preceded the World War, can be proved to have persisted in the postwar period, and to see how our model works under the conditions and with the richer material of that period. The contribution toward an understanding of the postwar-world which an investigation of this kind can be expected to make may prove worse than valueless, if its character, methodological background, and analytic intention are allowed to drop out of sight. Wherever it seemed possible, an attempt has been made to save space and to rely on the fact that current economic events are, and have been since the war, very much more efficiently reported than before, and on the hope that general contour lines are, therefore, familiar to the reader.[1] It will be convenient to deal first with the years preceding the world crisis and to comment on the latter in a separate chapter.

We exclude the years 1914 to 1918—for Germany also 1918 to 1923—on the ground that those years were dominated by "external factors" to an extent that makes their figures valueless for our purpose. This is, indeed, not quite true. The rhythm of economic life clearly persisted in the United States, and some aspects of war events are not without rele-

[1] It is, hence, suggested that the reader refresh his memory by going over the charts and comments of one of the well-known services. The Harvard Service's quarterly surveys are particularly recommended (for Germany, the surveys of the Institut für Konjunkturforschung, for England those of the London and Cambridge Economic Service). For students of economics there is no more stimulating exercise than to bring to bear their analytic apparatus on the task of interpreting the course of postwar events as described in those reports. The most convenient basis for a study on a world-wide scale is, perhaps, the material of the League of Nations.

vance for the study of business cycles. In particular, war expenditure affords as good experimental evidence as we can ever hope to get about the nature and consequences of a boom which has nothing to do with innovation and is brought about by expanding credit and stimulating consumption alone. The fact that expenditure was not directed into channels which would commend themselves to advocates of such a policy is entirely irrelevant,[1] for all that matters is that depressions were actually impending or in progress in 1914 and that public expenditure turned them into prosperity first and created untenable situations afterward. But although the case almost ideally complements and illustrates part of the argument of this book, we will follow the practice of the majority of students and eliminate those violent "irregularities" by leaving out the figures of those years.

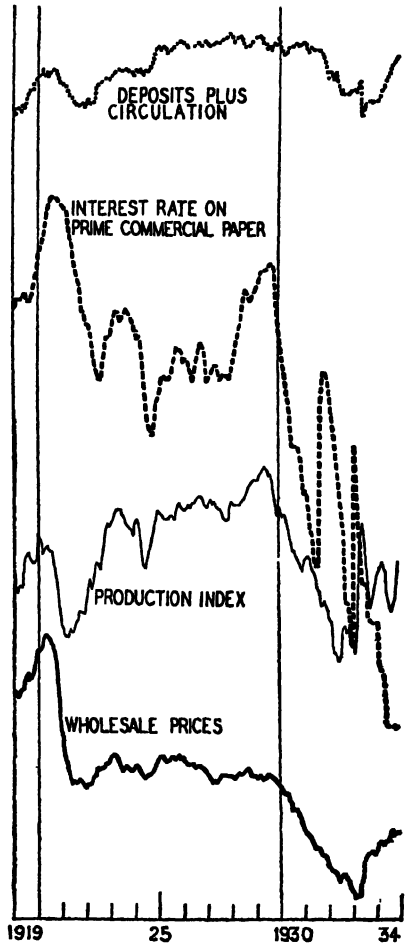


CHART XXXIX.—United States postwar "pulse" (see Appendix, p. 1065).

It is obvious, however, that external factors in our sense continued to play a supernormally important rôle throughout the postwar period. That our second component of economic change, the cyclical process of evolution, was still present and asserted itself in the same manner as before is not so obvious. Owing to the historical character of our subject—or the fact that it is "institutionally conditioned"—this question would arise in any case, even if there had been no war: whenever we wish to apply our analysis to an additional span of time, we must always ask

[1] Similarly, it is, in the case of the spending policy so consistently followed by the government of Louis XV, entirely irrelevant that most modern advocates of "expansion" would not approve of the objects to which that expenditure was applied. Whatever those objects, such expenditure ought to have produced prosperity *without relapse*. If there is anything in a theory which, in fact, was widely held at that time and has experienced a most striking revival in our days, it would be but justice to rewrite the history of, say, the ministry Aiguillon-Maupéou-Terray in more eulogistic terms than have so far been used.

whether our process still persists. The method of deriving an answer is to locate the postwar period in our cyclical schema, to formulate the expectations which follow from that, and to see how far they agree with observed fact. According to that schema the postwar time up to the world crisis covers parts of the recession and depression phases of our third Kondratieff which underlie two incomplete Juglars. If fluctuations

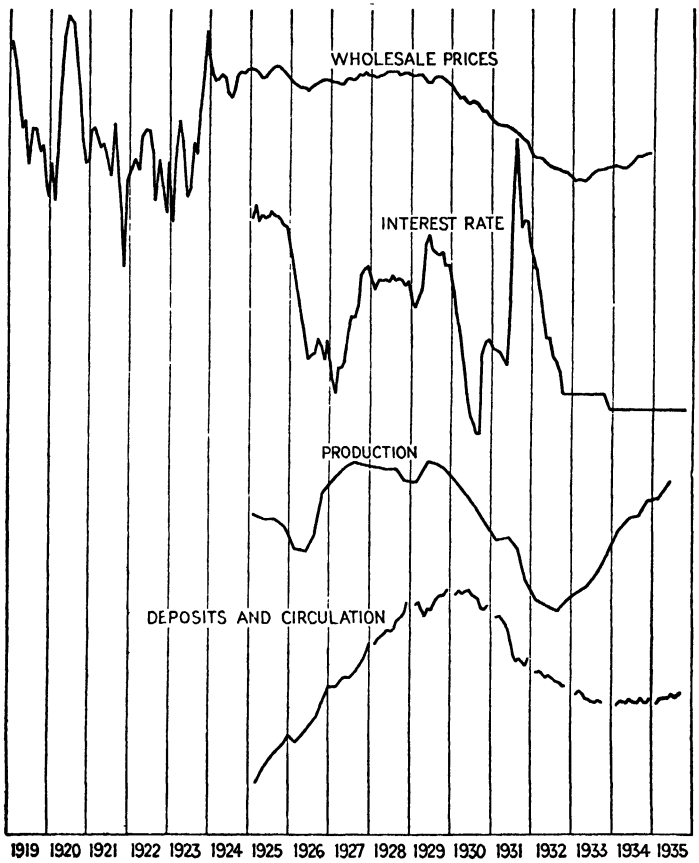


CHART XL.—German postwar "pulse" (see Appendix, p. 1066).

behaved as they did before the war, those Juglars would be the third and fourth of that Kondratieff. The third would complete the recession, the fourth would entirely lie on (but not complete) the depression phase of the latter. We ought to be able, finally, to discern the Kitchin wave superimposed on those two. *The time series picture of all this must then link up with the historical facts of the industrial process behind it.* Expectations are perfectly definite and will be formulated as our picture unfolds. It is recommended, however, that the reader formulate them now and

compare them with the Postwar Pulse Charts herewith presented (Charts XXXIX, XL, and XLI).

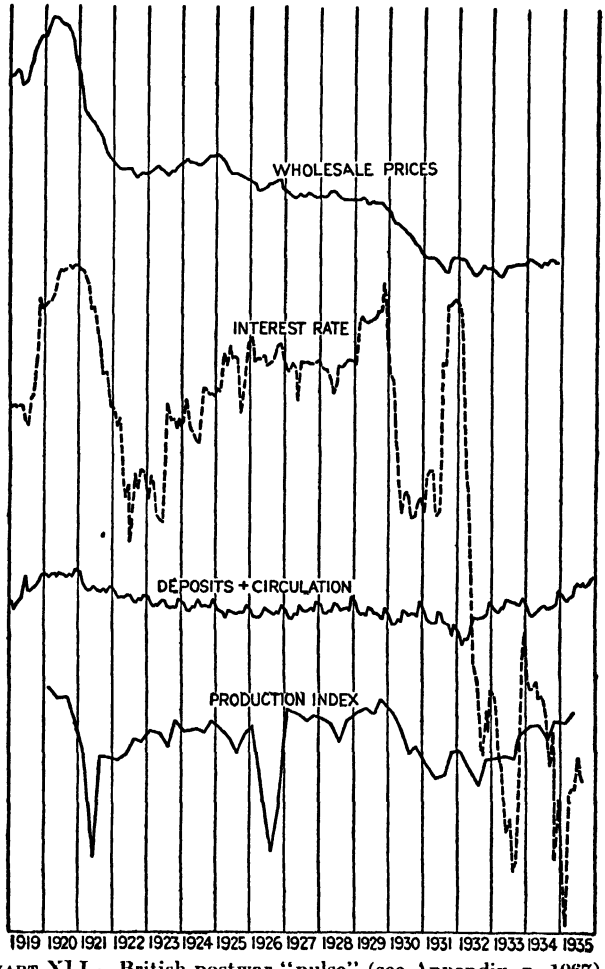


CHART XLI.—British postwar "pulse" (see Appendix, p. 1067).

B. Comments on Postwar Patterns.—Now we will drop, if only for a few paragraphs, the practice, imposed upon us by the nature of our task, of treating the institutional framework of society, the attitudes of individuals and groups, and the policies resulting from a given social pattern as data of our economic process, and changes in these data as external factors. We will glance at the social process as a whole and in so doing adopt the convenient, though possibly inadequate, hypothesis of Marxism, according to which social, cultural, political situations and the spirit in which and the measures by which they are met, derive from the working

of the capitalist machine. Our cyclical schema lends itself to this view, not only because of the length of its longest wave, which brings long-run social changes within the reach of business-cycle analysis, but also because it stresses that kind of economic change that is particularly likely to break up existing patterns and to create new ones, thereby breaking up old and creating new positions of power, civilizations, valuations, beliefs, and policies which from this standpoint are, therefore, no longer "external." The standard illustration is afforded by those innovations which drove the artisan's shop into modest reservations and, together with the artisan's shop, also the artisan's world. Gathering up the threads that lie all over our edifice—see, particularly, Chaps. III, VI, and VII—we might thus try to understand the social configuration of the postwar period from the economic process we have analyzed.

But we should find the task more difficult than the analogous one in the cases of the first and second Kondratieffs. There the social process and its cultural and political complements were not difficult to interpret in the sense of the working hypothesis which for the moment we have adopted. All that was not covered by it we could comfortably stow away as atavisms. This is not so in the case of the Neomercantilist Kondratieff. If the reader refers to Chap. VII, Sec. E, he will find that we had to recognize, besides phenomena that indicated consistent development of previous tendencies, the presence of other phenomena that did not seem to fit into the same current but rather to fight against it: they looked like a revolt against the rational or rationalistic civilization of that epoch. Of course, it is easy to label them, too, as atavisms. This sounds convincing in some cases, for instance, in the case of the German legislation for the protection of the artisan class (*Handwerkergesetz*, 1897). Here we see a dying stratum trying to defend its crumbling basis by political means. It is not so convincing in others, and any open mind must admit the possibility that a movement of such breadth and depth may have been more than an atavism or the last card of a decaying class. The fact that the writer had no better name to offer for it than *Neomercantilism* sufficiently shows that so far he has not succeeded in interpreting it to his own satisfaction.[1] For that term, at best, gets hold of one of many aspects and is as inadequate as Nationalism or Anti-

[1] The atavism theory was expounded by the present writer in his study entitled Zur Soziologie der Imperialismen, *Archiv für Socialwissenschaft*, 1916. The Marxist theory of imperialism (Bauer, Hilferding) mentioned in Chap. VII made the attempt to construe prewar imperialism as an outgrowth of the conditions of trustified capitalism. This explanation, which conserves unity of principle, has, of course, great attractions for every mind that has an analytical bent, and could be generalized to include postwar fascism. It is not possible here to expound the reasons why it is inadequate. A glimpse of a view that now seems to the writer to be nearer the truth than either the Marxist or his own theory is embodied in Karl Renner's concept of Social Imperialism (Sozialimperialismus).

rationalism would be. Now that tendency or attitude did not perish. On the contrary, it developed during the postwar period and in developing revealed itself more fully in the Corporative or Totalitarian or Fascist State and also became ideologically articulate. However much the war —and the circumstances of the "Have-not nations"—may have had to do with concrete forms, mechanisms, timings, and surface events, that departure from the road that leads from capitalism to orthodox socialism is not "due" to it, and the general drift of this page might have been the same had it never occurred.[1] The answer to the question how this development may be expected to affect our cyclical process depends on the kind of planning that a fascist government undertakes: given sufficient power and insight in a central authority, innovation may of course be planned for in such a way as to minimize disturbance.

1. If this component of postwar history can be traced to prewar sources, everything can. For the only other component—the "socialist" one—is perfectly *en règle* from the standpoint of our working hypothesis and may readily be described in terms of the rationalizing, leveling, mechanizing, and democratizing effects of capitalist evolution. This is too obvious to detain us, and only a few points of particular relevance to our subject need elaboration.

First, the rise of the labor interest to a position of political power and sometimes of responsibility, which is but the most conspicuous of the symptoms of a profound change in social structures, is clearly a product of capitalism in our sense of the term, which created a political world and political attitudes fundamentally incompatible with itself even where, as in the United States, the labor interest was (within our period) not politically dominant. The habit of the old-fashioned liberal—in the European sense of the word—of blaming "politics" for almost everything he considers less than satisfactory in the capitalist world is, as far as this goes, in fact open to the objection that in blaming "politics" he is blaming a product and an essential element of the system he approves. Taking the social system of capitalism as a whole, it is meaningless to

[1] The question naturally arises whether that turn of phrase is admissible at all. The answer is that, even from the strictest determinist standpoint, there is meaning to an analysis—*a Gedankenexperiment*—of what difference the elimination of an element in the historical process would make. Another problem may be noticed in passing: it has been held that great wars are merely incidents of the process of the Long Wave, "regularly" coming near its upper turning point as a consequence of the expansion of the productive apparatus which then fights for markets. There is nothing in that "regularity." For it is obviously absurd to interpret either the Napoleonic or the Franco-German War as explosions of redundant capitalist forces—the French industry was, in Napoleonic times, to a great extent in the craft stage, and even in 1870 Germany was a primarily agricultural country. The problem, therefore, arises only in the case of the war of 1914 to 1918. The writer thinks, though he cannot prove here, that the history of its causation clearly yields a negative result.

say that it—or any element of it, *e.g.*, the gold standard—is checkmated by "politics." What ought to be said—on this level of analysis—is that it checkmates itself.

Second, it is worth mentioning that capitalism, also by its own working, evolves a phenomenon which, or the importance of which, was not foreseen by Marx: the clerical class. The growth of the laboring stratum proper, relatively to the increase of gainfully occupied persons, ceased in the first decade of this century, but the relative growth of the salaried employee (roughly equal to "white collar") then became spectacular[1]—for obvious reasons of capitalist technique. The interests of this class—the "logic of its situation"—and its attitudes differing considerably from the interests and attitudes of "workmen," we have here a factor to the power of which much of the politics and policies of postwar times may be traced, particularly in Germany. We must dismiss this most interesting subject with two remarks: that this New Middle Class, as it has been called, forms in some countries and comes near to forming in others, together with farmers (peasants) and small businessmen (mainly retailers), a majority of the population,[2] which, though split into widely differing sections, yet feels and acts uniformly in many cases; and that in fundamental attitude it is as hostile to the interests of the bigger and big bourgeoisie as is the working class in the narrower sense of the term, though also hostile to the interests of the latter. It is in the light of these facts and not in the light of the simple but entirely unrealistic[3]

[1] Take, for instance, the German case. The figures of 1907 and 1925 are but imperfectly comparable. But the number of gainfully employed persons (*Erwerbstatige*) increased by 24 per cent, the number of workmen by 24 per cent (34 per cent in industry, however; there was a decline of 9 per cent in agriculture) and the number of salaried employees (*Beamte und Angestellte*) by 66 per cent, in industry (and *Handwerk*) alone by 135 per cent. The absolute figure was in 1925 a little over 5.2 millions.

[2] Take, again, Germany in 1925: "Independents" (including the members of their families, whether working in the business or not, and the independents without a profession, but deducting one million for the "capitalist class") were, roughly, 23 millions; employees with their families, roughly, 10 millions—33 millions in all. Laborers (and their families; we include domestic servants) were not quite 28 millions (total population, roughly, 62 millions).

[3] Many sociologists and economists try to keep to that simple schema by means of two additional propositions: first, that the farmer and small businessman are on their way to extinction, hence will not, in the long run, help to swell that intermediate stratum; second, that the white-collar employee is really a proletarian like the manual laborer and ought to take his true place within the proletarian front. We need not go into the question whether or not these propositions will turn out true in the long run. For our purpose it is sufficient to state that they are not true for as much of the postwar period as has so far elapsed. *Ex visu* of that span of time, it is, in particular, not true to say that the bulk of white-collar employees has refrained from joining the proletarian front merely because of the pressure to which they are exposed. This assertion about pressure seems to rest on a false generalization from inadequate observation. It is not so easy to exert pressure of the kind

contrast between property owners and proletarians that postwar patterns must be understood.

Third, capitalist evolution not only upsets social structures which protected the capitalist interests, by progressively eliminating precapitalist strata from politics and public administration and by creating new positions of political power, but also undermines the attitudes, motivations, and beliefs of the capitalist stratum itself. Even if an industrial family happens to own a given concern, wholly or nearly so, and if its members actually manage it, they do not under modern conditions look upon it in the way industrial families used to do in the past. Their attitude is more distant, less personal, more rationalized. But the leading men of the giant concerns as a rule fill a specialized function in a spirit which resembles that of the employee properly so called, and tend to distinguish between their success and that of the concern, let alone that of the shareholders. Moreover, the loosening of the family tie—a typical feature of the culture of capitalism—removes or weakens what, no doubt, was the center of the motivation of the businessman of old. Finally, the top group—say, 40,000 men and their families in this country and just about as many in Germany—absorbs, subconsciously and by an infinite number of channels, views, habits, valuations—cultural worlds—that are not its own. "Capitalists" cease to believe in the standards and moral schemata of their own class. They adopt, or connive at, many things which their predecessors would have considered not only injurious to their interests but dishonorable: in surveying modern economic fact, one cannot but be struck by the discovery of how much of the typical behavior of the bourgeoisie of the nineteenth century was extra-economically conditioned. All this, of course, links up, in a way that hardly requires explanation, with the decrease in the importance of the entrepreneurial function noticed in Chap. III, Sec. C, 5 and Chap. IV, Sec. B.

Fourth, both the rise to power of strata untinged by bourgeois attitudes and the fact that these attitudes lose their hold on the bourgeois stratum itself, which to an increasing extent allows itself to be educated by its new masters and the intellectual exponents of these masters—as it used to allow itself to be educated by its former feudal masters—combine to produce the anti-saving attitude of our epoch so clearly voiced in its popular, as well as scientific, literature on economic theory and policy. Saving with a view to providing revenue for an indefinite family future was part not only of the economic but also of the moral scheme of life of the typical bourgeois. The attempt to prove that such thrift is harmful to the interest of the masses always has been a major element in anti-capitalist arguments, which without it would be open to a dangerously

contemplated on a body of employees. And nothing can be clearer than the fact that it is precisely the proletarian class consciousness that is wanting in that stratum.

obvious reply. Attempts to prove that it is also harmful to the capitalist interest itself have never been wanting. But in our time the lesson is being learned and beginning to motivate public policy. Whatever its merits or demerits, its success must be understood as part of a general short-run attitude of modern man toward economic problems and situations, which follows from the changes in social structure. All this spells a profound change in the environment within which the capitalist engine works, and in particular may invalidate in a near future that extrapolation of past performance which, despite the arguments put forth by some authors in order to establish a tendency toward retardation, it was thought justifiable to make (Chap. IX, Sec. B; also see *infra*, Chap. XV, Sec. H).

2. But recognizing thus fully the relation, at least of interdependence, possibly of causation, which exists between capitalist evolution and its social and sociopsychological complement, no more debars us from recognizing the existence of distinguishable spheres of social activity between which in a given case given effects may be apportioned, than recognition of universal interdependence of prices debars us from distinguishing them and from tracing given effects to the behavior of, say, one of them. Moreover, every such sphere, however much the product of one comprehensive process, acquires, when once formed, a life and mechanism of its own that enjoys many degrees of freedom. This is enough to justify our going on to work with the concept of External Factors. In particular, it is clear that we cannot from a study of economic conditions alone determine what will happen in the political sphere, and if we cannot, there is not much practical value in emphasizing any quasi-religious belief in such determinateness that we may harbor. On the contrary, we must deal with all the facts of each sphere as we find them—which precisely means that they are external factors for one another. For instance, it is not enough and it is perhaps not even very enlightening to know that—possibly—England's economic conditions and interests to some extent explain her general attitude to the United States during the Civil War. This will not explain why she came within an ace of, yet refrained from, interfering by the force of arms. Even the necessity—so repulsive to many students—of taking account of the personal element cannot be denied. Hence, purely economic diagnosis of the type for which political action is merely a "disturbing factor" is not necessarily devoid of meaning but may be instructive to bourgeois and socialist alike (see *ante*, Chap. I). We may also note in passing that there is no justification whatever for the habit some economists have of skirting uncomfortable issues by pointing to the compelling force of social and political situations. To any situation the political mechanisms and their crews can react in many different ways. What is compulsion to some is not compulsion to others. In any case, it is not his professional

equipment that entitles the economist to pronounce about this question. And the truth or falsity of his economic propositions is as independent of "political necessity" as the truth or falsity of a doctor's diagnosis is independent of whether or not the patient is willing or able to act upon it.

In this sense the World War is for us an external factor. From the facts the above remarks were intended to cover, it seems to follow that it did not "create" any of the fundamental social features of the postwar world, although it accentuated some and may have anticipated others. The physical destruction—including the expenditure of productive energy on that tremendous "excess in consumption"—and the loss of life in the most active age groups were made up quickly, the former with a promptness which in another social atmosphere would have been admired as a marvel of industrial efficiency. All this reduces for our purpose to two statements: first, that physical destruction, reinforced by the accumulation of omitted replacements and investments, became the source of a reconstruction demand, not only in our three or in all belligerent countries but also in others, which accentuated the prosperities and revivals that occurred up to, roughly, the middle twenties, although this effect fully asserted itself only in this country and was in England and Germany counteracted or delayed by the well-known circumstances to be noticed presently; second, that the shift from war to peace conditions involved rearrangements that almost wholly account for the short "jolt" in 1918 and partly for the crisis of 1921, which was, however, in step with the ordinary run of cycles and was only intensified by this factor (as was the crisis of 1815).

The moral disorganization brought about by the war and by inflation and their effects on the cultural inheritance of mankind would, in any social history of our time, have to occupy a much more prominent place. It accounts to this day for many of the most striking phenomena in all sectors of social life, and it was mainly responsible for the lack of stamina that was displayed by the ruling strata in some countries and that suddenly forced issues into practical politics for which evolution was providing, but had not yet provided, the necessary conditions. One example will suffice to illustrate this proposition and its bearing on our subject: no serious socialist would in 1914 have expected—no serious socialist would have desired—that practical realization of the socialist program would by 1918 become, in many European countries and in an otherwise quite immature situation, a political issue, merely because of the moral breakdown of the ruling strata. When socialist parties were, nevertheless, confronted by that fact, they were unwilling or unable to use the Russian method and to bear down resistance in streams of blood in order to force into the socialist mould a humanity that would not shape for it of its own accord. Deadlock ensued in which neither "capitalist" nor

"socialist" policy prevailed. As a sort of compromise, the capitalist engine was allowed to work, but was put under a pressure that prevented it from working according to design. We shall presently glance at the case of Germany, which exemplifies that state of things particularly well. But its fundamental contours also show elsewhere, for instance in England. It is not generally realized—many people have a strong aversion to realizing[1]—how important this is for an explanation of the economic history since the war and how many difficulties were created or increased by the attempt to handle the essentially intracapitalistic problems of this period by anticapitalistic methods, which yet nowhere, with the exception of Russia, went far enough to replace the economic forces they weakened by those of another social system. Short of socialization, the most obvious measure of the pressure to which the capitalist organism has been and is being exposed, is the amount and the progressiveness of taxation.[2] Independently of this, the direct effects on the economic process of income, corporation, and inheritance taxes are considerable (see below, Sec. C). For both reasons, a prominent place will be allocated to fiscal policy in the analysis that is to follow. In consequence, other aspects of domestic policies will have to be neglected.

3. Thus, the war undoubtedly precipitated, and gave their particular forms to, developments which it is reasonable to assume would have come about without it, but would have come about more slowly and in different forms. It is in connection with these developments that foreign policies and the problems of international economic relations in general must be seen. Their history naturally divides up into three periods: the period of continuing economic—in some points even extraeconomic—warfare, from the armistice to 1924 (London conference; Dawes plan); the period during which the arrangements arrived at were widely believed in and acted upon, and which lasted from the Dawes plan to roughly the end of 1927; and the period of increasing friction, ending in the midst of the world crisis in the Hoover moratorium and, later on, in the liquidation, *via facti*, of the reparations and inter-Allied debts. Since the first period coincides with German postwar inflation, which we exclude, all that need be said about it is that, while American business situations were for the

[1] That aversion is easy to understand. Most people who write and think about postwar events are in sympathy with socialism of some sort. But most of them are not militant, so far as the ultimate goal is concerned. It is natural for such essentially "transitional" mentality to accept for the time being a highly socialized capitalism as a substitute. It is no less natural that, having accepted it, they try to believe in its possibilities and to fight against any suggestion that it may be productive of consequences which from their own standpoint they would have to consider as "undesirable."

[2] It also affords, excepting times of national emergency, the most obvious measures of the political power of the capitalist class. Everything else may be phraseology; the income and inheritance taxes are facts.

time being little and, if anything, favorably affected by the course of international events, England suffered greatly: her exports to Germany, for instance, were even after 1924 smaller by about one-third than they had been in 1913 (measured in the 1925 units of the Statistische Reichsamt), but before that year her troubled relations to her "best customer" certainly helped to account for her share in the depression of 1921 and for he unsatisfactory recovery that followed.

As regards the second period, our statement that the arrangements arrived at were acted upon requires qualification. The world never squarely faced their fundamental consequences, the unavoidable German exports in particular, but poured American and other credits on all the unsolved problems and plastered gold currencies—most curious atavisms though they were, in a world otherwise resolved not to play the capitalist game—on essentially untenable situations. Since it is impossible to enter upon these matters and since the salient facts may be assumed to be familiar, we can for our purpose compress the comments that would be necessary into the statement that this "export of American capital" did not act as we would expect capital export to act under more normal conditions, but that for the time being it largely counteracted the disturbance that would otherwise have ensued from international political payments. Moreover, while it thus relieved stringencies in many countries, it did not create corresponding ones in the lending country, because America still remained a creditor on current account, even apart from the short balances which for familiar reasons continued to flow toward her. This explains the astonishing fact that those "political transfers" will not play any great role in our analysis of the processes of that period except in the German case, and that even in the latter case it is transfers to Germany, rather than transfers from Germany, that shaped situations. This even applies to the third period, almost until the outbreak of the world crisis when, though partly for political reasons, short balances took fright. But the fundamental facts of the situation, accentuated as well as expressed by protectionist tendencies and the passing of the Locarno atmosphere, had begun to assert themselves before that.

It should be observed, however, that if those temporary solutions of the international financial problems created by the war proved inadequate, and if their economic consequences, including their—secondary—share in the causation of the world crisis, turned out as they did, this was only because of the political environment within which they had to work, *i.e.*, that our assertion of their inadequacy must be understood to be relative to the social situation previously glanced at. They were bankers' solutions, which the nations concerned were unwilling to accept and which they defeated by refusing to allow the mechanisms to work on the functioning of which the authors of those solutions relied. Looked

at as business propositions, they would not, in a peaceful world accepting bourgeois standards, have been obviously absurd, and it would not in such a world have been unreasonable to expect that they would work out in the end. The well-meant proposals of all those international conferences that met to discuss the gradual removal of trade barriers look to us like strange anachronisms and certainly were as futile as proposals for disarmament must be in a world in which every nation that counts is bent on armament. But they were perfectly sound economics. Even the gold currencies were such failures only because trade barriers, fiscal policies, social and military expenditure, and insistence on higher money wages did not allow them to function and because in that hostile environment short capital was rushing about like a hunted hare. Given all these facts, it was and is indeed little short of ridiculous to trust to the remedial forces of *laisser faire*. But since they do not, any more than the war itself and Versailles, uniquely follow from the logic of our evolutionary process, it is not to the interest of clear thinking to speak of any inherent tendency of capitalism to run into such deadlocks.[1]

4. We will mention briefly a few examples of various other types of war effects. In some countries, such as New Zealand, war demand had induced expansions which were clearly untenable under normal conditions. Even disregarding the speculative excesses that actually occurred, we have no difficulty in understanding that liquidation was unavoidable. In New Zealand it began in 1921 and continued, witness the abnormal number of bankruptices, almost without interruption right into the world crisis. Protection, borrowing, and prosperities in many parts of the world mitigated the process, which up to the crisis spelled additional business for England—the total imports of New Zealand more than doubled from 1919 to 1920 and then remained on a lower, but still very high level —and in the crisis additional embarrassment through frozen credits.

[1] The reader need not fear that the above argument proceeds from any intention to "whitewash" capitalism. For, as pointed out before, it leaves him free to condemn as much as he pleases the social system *as a whole* which produces such deadlocks. But it serves no purpose to blur the diagnosis of that situation by faulty economic argument. This has been done not only by those writers who are prisoners of a rigid formula, but also by economists who care more about conveying their practical advice than about analysis. The discussion on the reparation problem may serve as an example. Instead of stressing the simple and trivial truth that the Dawes tribute was *morally* inacceptable to Germany, and *economically* inacceptable to the recipient countries —which would never have submitted to having their industries crippled by the German exports that would have been the necessary consequence of actual payment —many, especially English, writers tried to prove the economic impossibility of those exports on grounds of elasticity of demand, while it is perfectly clear that, looked at as a business proposition, the Dawes tribute would have been nothing else but a "commission" paid by Germany for the industrial conquest of the better half of the world. If the world was unable to act upon this possibility, it may have been sound advice to cancel both reparations and inter-Allied debts, but this does not save the reasons by which that advice was supported.

The example is really typical of many more important cases, all of which contributed their special crises to the world's economic situation after 1929. It is worth mentioning that in the maladjustments revealed by the cessation of war conditions, the New Zealand wage level cannot have counted for much. If the official index may be trusted, real wages moved under the 1914 level until 1928. This also applies to other cases. The widespread opinion, for instance, that Australian wages were a major cause of subsequent troubles is hardly borne out by observable facts.

In other countries the war quickened industrial expansion, which it is reasonable to assume would have ensued anyhow in the course of time, and thus contributed to that decline of the position of Northwestern Europe in the world's economy, which in itself is not a war effect. The rise of a native capitalism in the tropics is a case in point. The war profits of India, for instance, gave an impulse to native industry which, since it directly affected Lancashire, may be listed among the factors which shaped England's economic history during the period. But the effects of all the other cases of this type that might be mentioned—Japan's great stride in industrialization, for instance—either dispersed themselves over too wide a surface to signify for our purpose or were, for the time being, too much compensated for by the demand for foreign goods—investment goods; a characteristic change occurred, as compared with prewar times, in the composition of European exports—incident to the early stages of the process.

Still another type of consequences may be instanced by the breakdown of Russia and the subsequent developments under the Bolshevist rule. It is obvious that these events, had they occurred in an otherwise "normal" world, would have greatly affected conditions in general and the cyclical process in particular in several other countries, particularly in Germany and England. As it was, however, the effect was lost in a mass of much greater dislocations of industry and trade, and no distinct process of adaptation to the new state of things in Russia was required. Business all over the world had, of course, partly to go without the stimulus that Russian reconstruction and expansion would have offered under other circumstances: if we extrapolate her industrial development in the 16 years preceding the war, we have no difficulty in forming an idea about the quantitative importance of this *lucrum cessans*. Moreover, without the loss of French investments in Russia, understandings about reparations and inter-Allied debts would have been much easier. But it should not surprise us that we find little of positive effects. Much the same argument applies to the case of China and to others.

5. Since the role which postwar protectionism played in the developments of the twenties and in the causation of the world crisis has been so completely overlooked by some students of the business cycle and so

obviously exaggerated by others, it will be convenient to restate explicitly the view adopted for the purposes of our analysis—which, it should be borne in mind, excludes the wider aspects of the matter, such as the relation of protectionist policy to human welfare and to peace. In the first years after the war, duties, prohibitions, quotas, and other weapons from the arsenal of protectionism were, of course, elements of the general scheme of continuing economic war. But they were also something else. Adaptation of industry and trade to the new conditions above referred to, permanent and transient, was at best a difficult task, involving in many cases abrupt dislocations. This becomes obvious if we glance at the postwar figures both of commodities produced and of commodities internationally exchanged. In some of these cases, protective tariffs or even prohibitions were, if not the only means, yet the most obvious means of averting sectional catastrophes, from which cumulative processes (spirals) might easily have ensued. Unequal depreciation of currencies, of course, greatly added to this class of difficulties. Many measures, such as the McKenna duties and even the Fordney-McCumber Act, must, in part at least, be interpreted in this light and on balance probably mitigated many more difficulties than they created. At the other end of our period, immediately before and during the world crisis, a similar argument applies, especially after the newly established currencies had begun to give way, although with lesser force and although a panicky policy of protection and "incapsulation" then went to obviously irrational lengths.

In the years from, roughly, 1924 to, roughly, 1928 some steps toward freer trade were actually made, some countries removing certain barriers and the tariffs of others being automatically lowered, in cases of specific duties, by depreciation not always compensated for by a gold clause. However, it is understandable that not more was accomplished: dislocations and untenable war growths continued to exist; unequal depreciation of currencies was replaced by unequal stabilization, which in some cases overvalued and in others undervalued the legal tender unit; political payments, especially but not only in the case of Germany, provided a motive for aiming at an active balance of trade entirely justifiable even from a free-trade standpoint. There was, indeed, "nationalism." Its outstanding manifestations are to be found in the policies of the majority of the newly created small states that tried to foster industrial development at any price. But that great movement of which we primarily think when speaking of modern nationalism, and which has been recognized above as allied to one of the two great components of the social atmosphere of today, has really little to do with the commercial policy of the great nations—and the small ones of old standing—during those years. That policy was dominated by current vicissitudes partic-

ularly in England, America and—until the National Socialist party rose to power—in Germany. England substantially adhered to the principle of Free Trade until 1932. The edge of German protectionism was in her agrarian situation. And again it is reasonable to think that on balance and in spite of many ill-conceived individual measures, European protectionism during those years hardly accentuated prosperities and depressions, or created on balance additional maladjustments of major importance, whatever we might have to say about it from other standpoints. Moreover, it must not be forgotten that the volume of international trade could in any case not have been expected to develop along prewar trends, and that a certain amount of "autarky" was the unavoidable consequence of technological progress in many branches and countries (see Chap. XIII, Sec. C). Electricity and chemistry alone would have been sufficient to produce a tendency in that direction, so that the actual course of events cannot be simply attributed to protectionist barriers.

This country's famous "refusal to accept its creditor position" still remains. In that phrase there is, no doubt, some element of truth. But since, as pointed out above, American capital export to Europe—it reached about 5 billion dollars by the end of our period—more than sufficed to service her claims, the consequences for the time being were merely to quicken reconstruction in Europe. It was not this mechanism that produced the world crisis, but the world crisis that caused its breakdown. Then, of course, the situation thus created became a major factor in the ensuing depression. But even then it is not easy to see how, had a reduction of import duties been passed instead of the Hawley-Smoot Act, this could have improved short-run conditions in Europe without aggravating them in America. Whatever the merits of free-trade sermons, they can only apply either to the course of action that might have been followed had the crisis not occurred, or else to the course of action that might have been followed after it had passed. With this we are not concerned. For our purpose it suffices to conclude that protectionism as such played but a minor role in the cyclical process of the postwar epoch, and to cast a glance at this country's international balance of 1928, since that is the last complete year of the "prosperity plateau."

Commodity exports to Europe were then $2,342,000,000; imports of commodities and services from Europe plus remittances of immigrants and tourists' expenditure, very roughly—estimates of tourists' expenditures are particularly unreliable—2 billions. The resulting net credit of between 300 and 400 millions has to be increased by payments received on war debt account—200 millions—and net receipts from interest and dividends(?). This makes about 600 millions, which must have been mainly "paid" from additional credits, since the total of monetary gold

in the United States had fallen both in 1927 and 1928. It is true that the immigration of short funds, then approaching their 1929 peak, complicated the situation. But, with due respect for the excellent motives behind many of the exaggerations of which economists of all countries were guilty in the matter of American policy—Europe's willingness to lecture was more obvious than her willingness to pay—it is presumably safe to say that a sum of that order of magnitude could not, without a crisis, itself caused by other factors, have created an unmanageable problem. In the ordinary course of things, adjustments of the commodity balance amounting to a sum of the order of 300 millions would have been possible, even in a protectionist world: exports alone could have been gradually reduced to that extent without serious repercussions on the American situation,[1] while reinvestment could have absorbed the rest. Again, it was the crisis that prevented such adjustments, and suddenly made an insoluble problem of what otherwise was not only not beyond, but on the way to, a solution which, though in the future it might have *entailed*, did not then *presuppose* free trade.

C. Further Comments on Postwar Conditions in Our Three Countries.—

1. More nearly than any other country, the United States displayed, and substantially retained until the world crisis, a frame of mind appropriate to the task of running the capitalist machine, even to the extent of reducing what was almost universally disapproved of as an "un-American radicalism" to still smaller importance than it had had before the

[1] This reduction would have been brought about automatically by reduced capital exports if the meaningless policy of fostering commodity exports had been discontinued. Some planning would, however, have been necessary in order to safeguard those sectors on which the reduction of commodity exports would primarily have impinged. For it must be remembered that while American exports did not greatly signify as compared with the total of the nation's business, they did signify for agriculture, textiles, metals, machinery, and vehicles. It should also be remembered that we are discussing relations with Europe only. The relations of this country with other parts of the world raise different problems, which cannot be discussed here. It is obvious, however, that as far as the period under discussion is concerned the analogy with the English case in the second half of the nineteenth century is misleading, because England's established creditor position then bore a different relation to the additions that were made to it in any given year. A protectionist policy would, therefore, have created many more difficulties in her case than it can have created in the case of the United States: while a creditor position is rapidly being built up, the lending country tends to be in the position of debtor. Needless to say, nothing of this is, or intended to be, an argument for protection in general. But one more error about this country's creditor position should be mentioned, *viz.*, the error that it was due to the war and would not have developed without it. This is true only of the 11 billions of "political" claims and beyond them for the speed of the process. But fundamentally the United States were well on the way out of a debtor nation's and toward a creditor nation's position in the last prewar decade, and it is reasonable to assume that they would in any case have reached the latter by 1920.

war. Such deviations as occurred from those principles of action that are associated with the logic of the capitalist process were due, rather than to the intrusion of ideas hostile to that logic, to the failure to adapt old ideas to the new situation, as exemplified by so much as there was in the "refusal to accept the implications of this country's new creditor position" just discussed.

But apart from this and possibly monetary policies (see *infra*, Sec. F) and the rate of municipal expenditure, there were no lesions inflicted on the system by action from the political sphere. On the contrary, while the nation was bending its energies to the type of tasks characteristic of a Kondratieff downgrade, the federal government was pursuing a fiscal policy eminently "sound" in the old sense. It reduced taxation, going a considerable way beyond merely eliminating the excess profits tax; it reduced the federal debt and even set about to effect some retrenchments —Gladstone himself could perhaps have acted more brilliantly, but hardly more soberly. Up to an income of $100,000, the income tax was far below the European level. Federal expenditure, which in 1912–1913 had been 724.5 millions, moved, it is true, on a level of about 3.7 billions from 1925–1926 to 1929–1930[1] (including debt redemptions out of current revenue to the average amount of over ½ billion a year[2]). But under general conditions so exceptionally favorable this was not a very serious matter. Local Total Gross Expenditure increased from 4,593 millions in 1923 to 6,720 millions in 1929; State Total Gross Expenditure, from 1,208 to 1,943 millions. But both states and local authorities raised, partly from a lack of constitutional powers, partly from choice, the money they spent in ways which (whatever may be

[1] Federal Total Ordinary Receipts (as per Treasury Statements) were: 1920, 6,694.6 millions; 1921, 5,624.9; 1922, 4,109.1; 1923, 4,007.1; 1924, 4,012.0; 1925, 3,780.1; 1926, 3,962.8; 1927, 4,129.4; 1928, 4,042.3; 1929, 4,033.3; of which Tax Collections (National Industrial Conference Board, Cost of Government, 1923–1934, p. 18) were: 1922, 3,487.0; 1923, 3,032.0; 1924, 3,193.0; 1925, 2,966.0; 1926, 3,207.0; 1927, 3,337.0; 1928, 3,194.0; 1929, 3,328.0. Total Gross Expenditure was (Treasury Statements) 6,482.1 millions in 1920 and steadily fell to, roughly, 3.5 billions during 1924–1927, after which it rose again (1929, 3,884.5; it was 5,153.6 in 1932).

[2] Those redemptions were about compensated by the increase in state and municipal debt. Total public debt decreased (slightly) only in 1923 and for the rest of the period continued to increase, although total public issues outstanding, minus holdings of the United States government and government trust funds, slightly declined, moving on a level of about 30 billions. Therefore, we need not bother about the question how net redemption would have affected money-market situations and, through them, speculation and business. That would have depended on the sources of the funds by which redemption was effected and on the behavior of the households, firms, and banks that held the bonds redeemed. By drawing up a schema of possible combinations, the reader should have no difficulty in developing a complete theory of the effects of debt redemption and in realizing that both "deflationary" and "inflationary" consequences may ensue from it.

thought about them from other standpoints) did not substantially injure the economic machine.

Moreover, the government promptly abolished most of the wartime controls, regulations, and organizations; refrained from measures involving questions of social and economic structure at home; and successfully kept out of entanglements abroad, thereby creating the atmosphere congenial to private business[1] and reducing the importance to the American citizen of the struggles, sufferings, and upheavals in other parts of the world to the order of importance of a football match. Economists who are passionately determined not to admit that policies answering to their social and moral vision, particularly fiscal policies of anticapitalist tendency, can possibly interfere with the working of the economic system,[2] will no doubt hold that there was mere chance coincidence between that sociopolitical pattern and the economic results achieved in this country during the twenties, and between the different setup and the different results in England or Germany. In the fulfillment of our humble task of interpreting a given course of historical events and the behavior of given time series, we cannot, however, neglect the possible inference to the contrary. We speak of possible inference only, because in this point our argument transcends exact proof, as any argument about organic processes occasionally must, and because so many imponderable elements enter which must be a matter of personal judgment and (historical and personal) experience.

2. But the main points at issue with reference to effects of taxation as such—*i.e.*, as distinguished from those effects which a system of taxation may have if it is or is felt to be an element of a general atmosphere of hostility to capitalist success[3]—may conveniently be mentioned here

[1] It has been pointed out to the writer that the above argument reads like an advocacy of partisan principles. He does not see that. Nor does he see how he could guard against this danger, short of inserting explanatory parentheses to an impossible extent. If the reader misunderstands that passage, he will misunderstand so much in this book that one more misunderstanding hardly matters. Let it be reemphasized, however, that the above (which, besides, contains only statements of obvious fact to which nothing will be added except an inference about a causal connection) neither is intended to convey, nor is as a matter of fact sufficient for, an appraisal either of capitalism or of the particular line of action taken by certain political groups within a given historic situation.

[2] They could, however, as we shall not tire of pointing out again and again, admit it without prejudice to their standpoint, which obviously rests on extraeconomic valuations. What is an injury to an organism from the standpoint of a doctor, may be most "desirable" from plenty of other standpoints.

[3] To this aspect we shall have to return in the last chapter. Also, the above remarks cover only part of what for our purpose it is necessary to say on the subject. The rest has been divided up and inserted in various places in such a manner as to minimize expenditure of space. It includes some remarks on the problem how the use made of the sums raised by the receiving authority influences the effects of the "burden," on the view that taxation for certain purposes is "mere transference," and on other topics.

once for all. Since we cannot fully go into the matter, we will avail ourselves of the fact that there is (comparative) agreement about the effects of indirect taxes, such as specific taxes on the quantity produced or sold of a commodity. This agreement, such as it is, we owe to a fairly well elaborated theory which, though antiquated, is still widely accepted by economists and has recently been somewhat improved by borrowings from the theories of imperfect competition, of expectation, and so on. Its assumptions, however, limit its results to the case of small taxes and/or of individual commodities of small importance. The technical reason for this has an important counterpart in real life: wherever taxes are so small as to be amenable to analytical treatment by the calculus, they are also too small to affect the fundamental contours of economic behavior as reflected in the budgets of firms and households and, hence, to interfere significantly with economic processes in general and the cyclical process of evolution and its permanent results in particular. This proposition may be generalized to cover any small tax, no matter whether sectional, such as a tax on beer or on house room, or general, such as a turnover or an income tax, and extended in most cases to any tax that is small in a practical—though loose—sense and not only in the sense of the calculus. Most taxes—not strictly all—which are not small in that wider sense, on the one hand cannot be handled by that method—further repercussions, more fundamental changes in the economic system, reactions from and through the sphere of money and credit must be then taken into account —and on the other hand, do interfere with the results of business processes, for example, with the steady rise in the standard of living of the masses *as far as it is due to the working of the capitalist machine.*[1]

This, however, marks the point at which disagreement begins. The fiscal problem of our time does not primarily consist in the amount of revenue required by the modern state, but in the fact that, owing to the moral valuations prevailing, that amount must also be raised by heavy taxes[2] and, moreover, by heavy taxes framed not only without a view to

[1] Within limits, other methods of attaining a maximum standard for the masses may be effective without interfering with the contribution made automatically by the capitalist machine– the machine can be made to yield more than it would of itself without materially losing in efficiency. Even if it does lose in efficiency, the advantage to the labor interest may more than balance the loss it suffers, especially in the short run, but also in the long run. All that the proposition of our text amounts to is that any such advantage is gross only and must be subjected to scrutiny as to concomitant losses to be deducted. It stands to reason that the advantages will, as a rule, be visible and immediate and the losses more difficult to see and more remote in time.

[2] "Big" revenue need not imply "heavy" taxes. A transaction tax, for instance, which in this country has been actually proposed in the McGroarty bill, would go far toward raising adequate revenue without significantly altering the conditions of economic progress. According to Mr. Goldenweiser, total monetary transactions amounted in 1929 to about 1,200 billions (debits to individual accounts in 141 cities, plus an estimated addition

minimum disturbance but regardless of disturbance, in some cases even with a view to maximizing it. And the disagreement that is relevant to our purpose concerns either the reality of the effects alluded to in the last sentence of the preceding paragraph or their importance for, let us say *a potiori*, the development of total output. We will confine ourselves to the case which is most important in this connection and consider a high and highly progressive income tax—by which, to fix ideas, we will mean an income tax which, for a significant number of taxpayers in the higher and highest brackets, surpasses 25 per cent—that so defines income as to include savings and is reinforced by a significant corporation and a high or highly progressive inheritance tax.

First, there are what we may term mechanical effects, of which the most important is the effect on the sum total of private savings and accumulations. Taxes such as those we have in mind may enforce dissaving and even divestment, but will in general be partly paid from revenue that, in turn, would otherwise be partly saved. An obvious argument from general principles yields the result that, as a rule, this again will be partly made up for by additional saving by the same people or by those who are the ultimate recipients of the sums levied. But as far as the writer knows, nobody has so far doubted that the net effect of high taxes on the higher incomes will be a decrease of the national total of savings as compared with what it otherwise would be. As far as this goes, therefore, our opinion on how such taxes will affect "progress" and "industrial efficiency" depends on where we stand in the controversy about the importance and the *modus operandi* of private saving, which have been fully discussed before.[1]

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for checks drawn on banks outside those cities and payments in cash). ½ per cent of this sum or, if certain classes of payments were to be excluded, 1 per cent of half of it would be a small tax in the sense that it would nowhere exert perceptible pressure. But it would yield—in a year like 1929—6 billions.

Big taxes interfere with the economic process to greatly varying degrees. Big taxes on individual spots, such as a heavy tax on alcoholic drinks, does interfere significantly with the particular sector on which it impinges but not with the system as a whole. Among "general" big taxes, a tax on the return to or value of natural agents would be a good instance of a limiting case in which no long-run effects are to be expected if it were not for the facts that improvements are not easy to distinguish from "pure rent" and that the latter, as we have seen, for example, in the case of the apartment-house industry of Berlin, steps into the place of and acts as a substitute for profit. But all that matters here is the technical possibility of raising "big" revenue with small disturbance if that were intended—and small revenue with big disturbance.

[1] But it should be observed that many arguments turn, not on saving in our sense, but on underspending. Taxes on idle funds may have some stimulating short-run effects if conceived as temporary measures. This point, too, has been fully discussed in Chap. XI. One more aspect of saving and accumulation, which is important for an appraisal of short-run effects, will be added in the next chapter.

Second, there are the nonmechanical effects, *i.e.*, the effects through motives and attitudes. It should be obvious that any tax on net earnings will tend to shift the balance of choice between "to do or not to do" a given thing. If a prospective net gain of a million is just sufficient to overbalance risks and other disutilities, then that prospective million minus a tax will not be so, and this is as true of a single transaction as it is of series of transactions and of the expansion of an old or the foundation of a new firm. It should be equally obvious that business management and enterprise, being undertaken within an institutional framework of aims, ambitions, and social values fashioned to its logic, will for its maintenance depend, at least in the long run, on the actual delivery, in case of success, of the prizes which that scheme of life holds out, and that, therefore, taxes beyond a percentage that greatly varies as to time and place[1] must blunt the profit motive and, especially, the motive typical of both feudal and bourgeois society, that of founding a family position. As to the profit motive in general, it must be borne in mind that a policy of taxing away gains evidently above what would be necessary to call forth the efforts of *their individual recipients* and of taxing but moderately what the community considers "adequate" returns, if it is not to affect the total amount of effort, would really have to be accompanied by an increase in the sum total of managerial and entrepreneurial income, because the presence of conspicuously high and even fantastic individual prizes is, as everyone knows, much more stimulating than the same sum would be if more equally distributed among businessmen. As to that special form of the profit motive which is embodied in the term *family position*, and is largely eliminated by inheritance taxes of the modern type, it is as reasonable to hope that high inheritance taxes, being taxes on "static" wealth, will not affect industrial "progress," *i.e.*, the creation of new wealth, as it would be to hope that a prohibitive railroad fare will not affect traffic if passengers be allowed to board the trains free of charge and the fare be collected from them after they have taken their seats.

The reader has a right to object to the triviality of these considerations. Yet it is a fact that the reality of effects through motives and

[1] Moderate taxation, *i.e.*, taxation which, while making it more difficult, yet does not make it too hard to attain a given economic position, may even act as a stimulus. But however difficult it may be to determine the interval for which that is so, it is perfectly clear that since the war taxation in the higher brackets goes much beyond it.—High taxation, for example in a national emergency, as long as it is considered to be temporary, may have no effect on motive or even an effect that is stimulating. What taxation is "high" and what "moderate" also depends on the prevailing margins of profits. American taxation even from 1924 to 1931 might have been high in our sense but for the ease with which the businessman rode to success. Finally, much depends on the reaction of the monetary system, for example, on whether or not taxpayers are willing and able to borrow the amounts they have to pay.

attitudes is still more frequently denied than the bearing of accumulation on industrial efficiency.[1] But there is at least an *argumentum ad hominem* to be addressed to any economist who uses the profit motive in his analysis at all.[2] For net revenue would have to be a matter of complete indifference if rates such as we now discuss had no effect on the working of the capitalist machine. If, moreover, that economist teaches, as he is likely to do, the omnipotence of comparatively small changes in the rate of interest and the effectiveness in stimulating industry of protection, subsidies, and "reflationary" increases of prices, and still denies that high taxation has any effect whatever on the scale of output or "progress," he comes pretty near to contradicting himself, unless he holds that that effectiveness completely vanishes at the watershed between profit and loss.

3. The case of Germany is less easy to describe than that of the United States. Refraining from a repetition of facts that are but too well known (although some are perhaps already forgotten) and taking our stand on the year 1925, we may thus characterize the situation. Menace of social breakdown had been warded off by the determined action of the Social Democratic party in 1918 and 1919, which thereupon found itself in the impossible position of being (whether in office or not) the dominating political power in a capitalist society which it had saved when all that society's political organs were utterly shattered, but which it was by virtue of its principles unable to run according to capitalist logic.[3] The result was that economic policy could not be rationalized

[1] Many economists would, however, argue that the effect of taxation on the motives or the behavior of businessmen, whatever it may be, can be neglected in an analysis of variation in output and employment, because these motives do not matter anyhow, the businessman's hunt for profit having nothing to do with either output or employment which result from the economic process except that it sometimes interferes with them. A view of this type is largely a vision or impression—easily contracted in this newspaper world of ours, in which words are in the saddle—about which it is difficult to argue except by discussing the individual facts that in each case would be produced in response to a request for substantiation. In a general way, however, our analysis as a whole supplies the elements for criticism of this vision as well as the elements of its sociology.

[2] Marshall's great shade cannot be conjured up to testify against that. For though he seems to have held the opinion that a liberal dose of direct taxation would not reduce industrial efficiency, the rates he visualized were, except for temporary emergencies, so low as to make his argument quite compatible with ours. Nor can it be urged that we are using a rational schema of behavior that does not take account of fixed habits. We do take account of them. But this particular application of economic rationality is surely not unrealistic or farfetched. And those habits are likely to give way under the influence of unfavorable experience and pessimistic anticipation, as do even the habits of a puppy, which does not indefinitely jump for a sausage that is pulled out of his reach each time. Were it not for the reluctance to admit unpalatable facts, there would be little disagreement about this.

[3] Socialists went to lengths, however, which amounted to an *opus supererogationis*. The Sozialisierungsgesetz (1919) meant the shelving of socialization. But more was to

either in the socialist or in the capitalist sense: a deadening laborism threatened everybody and satisfied nobody.[1] Menace of national destruction had been warded off by the guarantees against invasion included in the Dawes plan. Menace of economic deadlock had been warded off by those credits which the world pumped into Germany, obviously believing that credits and democracy were all that a nation could possibly need. Menace, finally, of irreparable moral disorganization through inflation had been warded off by an energetic, if clumsy, balancing of the budget, consequent upon the construction of a rather rigid gold standard, both the Dawes loan and the successful bluff of the *Rentenmark* being minor, though still important, safeguards or pieces of technique.

The complete loss of foreign investments and of industrial and commercial positions abroad would in any case have been sufficient to unbalance an economy so largely based on them as the German was. Moreover, Germany's industrial organism emerged from the war with an antiquated productive apparatus, which then suffered further injury and, in part, further distortion because of that kind of irrational investment the sole motive of which was to take shelter from inflation—a good illustration of the popular belief that if only there be expenditure it does not matter what direction it takes. A crisis of adjustment both of structures and of values was bound to set in to clear the ground as soon as the support of *progressive* inflation was withdrawn, but much maladjustment then in existence was, as it always must be, very slow in dying. To the end of the period some of the growths of inflation continued their sickly life, constituting weak points, sources of chronic

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follow. The minister Hilferding, much too good an economist not to see what was wrong and much too good a Marxist not to realize that there are situations in which anticapitalist policy is in the end antisocialist, actually went so far as to attempt a very "capitalistic" fiscal reform. In November 1927 the leading socialist newspaper advocated reduction of the income tax (in all brackets). Nothing came of it. Difficulties for the socialists were greatly increased by the fact that their political allies, the centrist party, though less radical on principle, were much less amenable to economic reasoning than were the socialists themselves.

[1] The picture cannot be developed here, but two features must be mentioned in passing. First, the trade unions secured two points of their program - the eight-hour day and unemployment insurance. These measures were, in fact, overdue. But beyond that a huge legislative and administrative apparatus was built up by the competitive exertions of the two ruling parties for the purpose of serving the immediate interests of labor (the *Arbeitsrecht*), which, whatever its merits, is relevant to our subject by virtue of the economic waste and friction it created, and particularly by virtue of the efficiency with which it "skimmed," as the Minister Braun—a centrist—put it, the results of every upturn in business for the immediate benefit of labor, *i.e.*, applied potential capital to consumptive purposes. Second the socialists had to accept a no less wasteful agrarian policy, including subsidies to eastern agriculture, which weighed heavily on the economic process, yet entirely failed to reconcile

trouble, and one of the difficulties in Germany's economic relations with other countries.

The weakness of her international position made her industries particularly anxious to enter into agreements with foreign competitors in order to eliminate their pressure for hostile measures. Some temporary success was achieved[1] but, as far as it was, it carried all the disadvantages incident to "stabilization" in creating rigidities and cramped situations. From 1925 to 1928, however, the surface of things was smoothed by those foreign credits, by comparatively moderate impediments to trade, and by comparative order in monetary systems all over the world, as pointed out above. Even then the risk of industrial investment remained in Germany much greater than it was in England or in the United States, and much waste of effort and resources ensued from the necessity of shifting locations of industries according to political fears, and of remodeling equipment in response to foreign measures—an element never fully appreciated in diagnoses of the German situation. But when the flow of foreign capital ebbed and in 1929 finally ceased, and Germany's balance of commodity trade promptly *and easily* (without any "stickiness") swung in her favor in consequence[2]—a most striking verification of classic theory of foreign trade, as was also a temporary tendency in this direction in 1926—that smooth surface went to pieces. German reparation exports had suddenly become a reality. They were one of the influences that shaped the international commercial situation on the threshold of the world crisis, helped to induce the vicious circle of mutual restrictions (quota and so on), and effectively brought out the absurdity of insisting on payments which the creditor countries at the same time stoutly refused to accept.

As long as they continued to flow, however, foreign credits smoothed not only the difficulties incident to transfers on reparation account but other difficulties as well. In order to understand these it is necessary to recall what has been said about the social atmosphere and the political

[1] By the end of 1926 a considerable list of international cartels was in force, such as the potash convention of Lugano, the European union of bottle manufacturers, other European unions of enamel works and wood-screw producers, the international bulb syndicate, the international rail cartel, the cartel of German and Czechoslovakian iron-pipe producers, the German-Belgian wire cartel. International organizations for iron, copper, benzol, and other articles were at the same time under consideration, and some of them actually matured. After 1927, when French interests became increasingly restive under the impact of German exports, machinery was provided for producers of both nations to meet and to find themselves a *modus vivendi* (quota) by mutual agreement, to be ratified by the respective governments. For some time this, too, seemed to work with comparative success.

[2] Export surplus: minus 1,725 million marks in 1928; plus 36 in 1929; 1,642 in 1930; 2,872 in 1931. After that it began to fall owing to the universal "incapsulation" incident to the world crisis.

structure of that epoch, and to look at the fiscal policy that resulted therefrom. The first federal budget after inflation, though it intensified the "crisis of stabilization" by cutting deeply into the working capital of industry, was a signal success, yielding as it did a surplus of about one billion marks. In 1925 the total expenditure of the federal government, the states, and the municipalities, including social insurance and reparation payments, amounted to 17.3 billion marks or (as officially estimated) about 31.9 per cent of the national income, as compared to 8.4 billions or 18.9 per cent (postwar territory) in 1913.[1] But Germany's new political structure was unable to withstand popular demands and to plan rationally for the future. As soon as the immediate emergency was overcome, and the unwieldy mass of fiscal legislation systematized and somewhat adjusted by the "reform" of 1925, that fact asserted itself exactly as it did in France after 1928. Notwithstanding the friendly help which the Reparation Agent extended to the government by means of unfriendly notes and reports, expenditure increased by leaps and bounds. It reached the figure of 23.3 billions in 1927 and from that year on entailed a deficit, from 1929 even an embarrassing shortage of cash, although public revenue steadily increased through 1929, in spite of drastic reductions in the turnover tax that had wrought the miracle of 1925. Total indebtedness of public bodies rose, apart from the partial revaluation of prewar and war debts, to 7.7 billions in 1927–1928 and by another 6 billions net[2] till the end of 1929.

Analysis of the expenditure thus financed undoubtedly reveals admirable cultural and social achievement, eminently productive of economic and supereconomic values, in comparison with which the costs might even be called moderate. In particular, there is much to be set, in terms of beauty as well as in terms of welfare, against the desperate financial position into which the big cities maneuvered themselves. But neither that cultural aspect nor the various deficits as such are pertinent to our subject. The important thing is the unavoidable inference that we have here a case of an excess of consumption by public bodies, inducing excesses all over the economic system, withdrawing capital from industry, or preventing its being built up—directly by

[1] The figures refer to what is, in Germany, technically described as *Finanzbedarf*. They include items such as interest on the public debt, which it is usual to class as "mere transferences." Taxes plus contributions to social insurance amounted respectively to 13.3 billions or 24.5 per cent in 1925 and 5.4 billions or 11.5 per cent in 1913. They increased to 19.6 billions or 27.8 per cent in 1929. See for all figures, for example, Statistisches Reichsamt, Finanzen und Steuern in In-und Ausland 1930, p. 548. The figures for national income are highly controversial (see Sec. E).

[2] Increase from Apr. 1, 1928, to Dec. 31, 1929, was 6.56 billion marks, but redemption of prewar and war debts amounted to about 560 millions. Those debts in foreign currency or in units guaranteed against depreciation (*Festwert-und Valutaschulden*), which were contracted during the war and inflation, are excluded.

taxation,[1] indirectly by the ensuing rise in costs—and another illustration of the Doctrine of Spending. While it lasted, this process of impoverishment produced what many Germans at the time quite well characterized as a "prosperity of consumption" (*Konsum-Konjunktur*) which, contrasting so strikingly with underlying difficulties, superimposed itself on the ordinary run of cycles and produced figures of output that almost incurred the Dawes plan penalties. No doubt many fellow economists will call that the most normal state of things imaginable and deny with due epithets any suggestion to the effect that it would, in any case, have had to end either in a breakdown or in "inflation" followed by a still more vehement breakdown.

4. But the particular manner in which the breakdown actually came, as well as the effect of that policy before it came, was determined by the flow of foreign (and expatriated German[2]) balances. Data are not entirely reliable, but the main facts about this capital import stand out clearly enough.[3] "Restriction" having been decreed, *i.e.*, "inflation" having been definitively renounced by the Reichsbank on Apr. 7, 1924, both demand for foreign credits and readiness to grant them manifested themselves almost immediately. Although prevented, until the autumn of 1925, by the embargo on foreign lending from offering German securities for public subscription, English banks and bankers displayed willingness to resume short-term relations with former German customers as soon as—and before—the Dawes plan was carried, and even a ten-year private loan was negotiated in August 1924 (Prudential Insurance—North German Lloyd). American capital took nine-tenths of the loan to Krupp soon after the flotation of the reparation loan. These trans-

[1] The political structure also proved to be unequal to its task in that it reduced unpopular taxes while keeping up those that injured the economic engine. For 1929 the total load of taxation resting on industrial net returns, including everything, was about 90 per cent in the highest brackets, in many cases more than that. See No. 4 of the monographs (Einzelschriften) published by the Statistische Reichsamt. It does not follow, of course, that without those taxes net returns would have equaled the figures from which the percentages were calculated.

[2] Both during and after inflation, the flight of "capital" from Germany must have been considerable, and part of these balances probably returned under foreign flags. Figures are not available, but this matters little for our argument, since expatriated capital presumably behaved much as did bona fide foreign funds.

[3] An official survey of foreign indebtedness was first made in 1926. After the breakdown, however, and when the "standstill agreements" were being negotiated, a more comprehensive investigation—as of July 28, 1931—was made, and some further data were added later. The international commissions appointed in pursuance of the recommendations of the London conference (July 21 to July 23, 1931) issued two reports, known respectively as the Layton and the Beneduce reports (August and December 1931), which presented most of the available material. Among the literature on this subject the reports of a committee of the Verein für Sozialpolitik (Die Auslands-Kredite 1928, ed. W. Lotz, Schriften vol. 174, Chap. III) should be particularly mentioned.

actions ushered in a long series of similar ones: states, provinces, municipalities, semipublic corporations, especially light and power concerns, public and semipublic credit institutions, religious bodies of all types, as well as banks and industrial companies all rushed, in spite of the "suasion" and more drastic measures of the Reichsbank, for the opportunity of borrowing long in terms of foreign currency at what, counting everything, on the average came to roughly 9 per cent.[1]

They did more than that, however. Partly because of that official resistance to the rising tide of foreign indebtedness, partly for obvious financial reasons, borrowers, especially concerns and banks, at the same time borrowed short in whatever happened to be the most accessible of the foreign money markets. These short loans were cheap only if granted in foreign currency, but German debtors also owed, by the end of July 1931, about 4 billion marks to foreign, mostly nonbanking, creditors,[2] not all of whom were bona fide foreigners. The inflow of these various funds was a function, not only of business, but also of political situations and fluctuated considerably. But it persisted almost to the end of 1930. By then the long-term foreign debt amounted, according to official estimate, to the equivalent of 9.2 billion marks, and the short-term foreign debt, after some repayments in consequence of the scare of 1929, to about 14.9 billions.[3] Other foreign investments were estimated at 6 billions. This total of, roughly, 30 billions provided the exchange, first of all, for the transfers on reparation account equivalent to 10.3, and for interest payments which amounted to 2.5 billion marks. It also financed the building up of foreign balances and investments—9.7 billions and possibly more—and the net increase in Germany's gold reserve (deducting the reduction in foreign exchange held by the Reichsbank) which was 2.1 billions. Finally, it also covered the deficits in her commodity balance of trade, which during those seven years added up, after deduction of 3 billions for "services rendered," to 3.3 billions. This accounts for 27.9 out of those 30 billions. Various hypotheses suggest themselves with regard to the difference. It is, however, not

[1] The high cost to borrowers reflects, of course, primarily a large premium for risk. But it must also be remembered that the cost of most of these transactions was very high. Most of the securities placed in America, for instance—representing, roughly, two-thirds of the total amount of the long-term foreign debt—had to be laboriously sold all over the country to people of moderate means since, owing to the progressiveness of the American income tax and to the tax privileges attaching to the Liberty loans, the higher return from German bonds was not so attractive to large investors as one might think.

[2] English banks had, since 1927, also granted some credits in marks to German banks. These were not short, however.

[3] The official survey mentioned in a previous note puts them at 12 billions, inclusive of the 4 billions that were mark credits. But that figure is of end of July 1931; 2.9 billions had been withdrawn in the preceding seven months.

greater than we should expect it to be with data of this nature, which also leave many other points in doubt.

Thus, the excess of imports over exports absorbed only 11 per cent of the total inflow of monetary "capital." Two-thirds of it—roughly, 20 billions—was used up by reparation payments and Germany's foreign investment, including balances with foreign banks. It is not superfluous, however, to emphasize that the effects of this are inadequately described by saying that reparations and foreign investments were "paid out of foreign loans." This applies strictly only to a small part of that sum, at most 2 or 3 billions, which were directly borrowed for and applied to those purposes: only to this extent the economic life of Germany was for the time being, in fact, relieved from all further effects, exactly as if someone else had undertaken to carry those burdens for her. The *modus operandi* of all the rest was more complicated. The sums required were actually raised by taxation or paid by the individuals or firms who wished to invest abroad, and all the foreign credits did was to provide the exchange with which to transfer them. Schematically we can represent this process by assuming that taxpayers and investors bought the foreign exchange which borrowers had acquired, handing their marks over to them and the foreign exchange to foreign governments or sellers of assets. As thus financed, reparations and foreign investments neither increased nor reduced available funds in Germany. The foreign credits prevented temporarily all those adjustments of incomes, prices, and the balance of commodity trade which otherwise would have resulted from both. But they prevented them by a route that was different from and much rougher than that of direct borrowing for reparations and investments. This particular method was rendered possible by the fact that, barring import surpluses and interest payments, German business had no use for foreign exchange but needed marks for expenditure at home. This—the salient—point stands out still more clearly with respect to that amount by which foreign credits surpassed reparation, foreign investment, import surplus, and interest requirements, and which —partly reflected in the increase of the Reichsbank's gold holdings—of course, swelled deposits.

The effects are clear: not only were adjustments to the facts of the situation prevented, but the pulse of German business became dependent on the rate of flow of foreign funds; with foreign banks indirectly financing a considerable part of investment and current operations in Germany, the policy of her central bank was checkmated; the *Konsum-Konjunktur* mentioned before was powerfully propelled; and of course, a financial situation was created that was in constant danger of collapse on comparatively small provocation,[1] especially, as it was hardly avoidable under

[1] Many firms carrying on purely domestic business but having acquired the habit of financing themselves by short foreign credits came, however prosperous their income

the circumstances that both German and foreign banks should, directly and indirectly, knowingly and unwittingly, finance long-term industrial commitments by short foreign funds. Thus, part of the foreign credits effected precisely what an issue of greenbacks might have done: in a sense, it camouflaged "inflation" by producing its results under the surface of an apparently very "sound" monetary system.

But still more interesting than the effects are the causes of this practice of financing Germany's domestic business in this way. Concerns borrowed to such an extent because taxation absorbed what otherwise would have become fixed and working capital. They borrowed abroad because the same taxation—together with the preceding inflation—had reduced, and kept on reducing, the means of savers, because public and semipublic expenditure absorbed a large amount of the lending ("creating") power of German financial institutions and because domestic credit was, in consequence, both scarce and dear.[1] The responsibility of taxation and of public expenditure for the short credit situation, in particular, is obvious. Assuming that, at the end of 1928, foreign short credits amounted to 13 or 14 billions—an estimate that is arrived at by adding 50 per cent to the figure given in the Layton report—and deducting (without increasing the figure, though this would almost certainly be justified) German balances abroad, 4.5 billions, and credits for the current financing of German foreign transactions, which were "revolving" and not dangerous—this item, being very doubtful and to some extent also overlapping with the first, we will put at not more than 3 billions—we may perhaps estimate at a figure of the order of magnitude of 6 billions the credits that eventually created trouble. How much of these does the reader think would have flowed in at all if total public (not only federal) expenditure had been kept at the 1925 level, if the surplus of that year had been lent in the open market, if income and corporation taxes had been reduced, and if interest rates and prices had behaved as in that case they assuredly would have? It should be added that, though the "consumers' prosperity" would then, no doubt, have failed to come

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statement, in danger of bankruptcy whenever a cloud darkened the political sky. Since short credits will always take to flight in such cases, there is no need of attributing such phenomena to foreign, *e.g.*, French, ill will. But the logic of the situation itself created a sensitiveness of large sectors of business to erratic shocks, which was altogether abnormal and cannot be explained on any of those principles that we ordinarily use in analyzing economic fluctuations and "spirals."

[1] It follows that taxation, in fact, made reparation transfers possible. Only, it did so in a way very different from that which some economists thought of: they thought that taxation would reduce system expenditure in Germany, thereby depress the price level and thus produce the requisite export surplus. This it did not do precisely because of the foreign credits. But it forced people to borrow abroad for domestic purposes, and so produced the requisite foreign exchange by a different method, but for the time being not less effectively.

about, it does not follow that consumers' welfare would have been, even in the short run, substantially impaired.

If into this picture we insert the borrowing, both domestic and foreign, of the municipalities and the fact that much of the expenditure even of business concerns was unproductive in a commercial sense,[1] we have before us the groundwork of the theory of the specifically German prosperity of the later twenties, which is thus seen to link up with the socio-political pattern of the time in more than one instructive way, and also of the specifically German form of the subsequent economic breakdown, as well as of much besides. Some traits will be added later; many more would have to be added if complete analysis were feasible here. No suggestion of a one-factor causation is intended. But our facts and their consequences certainly suggest a lesson.

5. England's postwar situation may usefully be compared to her situation in 1815. As has been stated in Chap. VI, the national debt was, in relative importance, similar in both cases and so was the depreciation of the currency and the burden of taxation. The cases differ however in that the Napoleonic wars were times of vigorous industrial and commercial expansion while the World War left England with her industrial organism impaired and a loss of foreign investments which it took her

[1] The question of "productiveness"—or the cognate question: What is to be classed as an "investment"?—is a delicate one for other reasons besides the irritation it invariably causes. It bears upon our subject in two respects. First, when Mr. Schacht during his first tenure of office at the Reichsbank fought the rising tide of foreign debt, one of the arguments was that only such loans should be permitted that would issue in investments "productive of foreign exchange." Whatever might be urged against the correctness of this argument, its real meaning, *viz.*, that it was dangerous to finance by foreign borrowing anything except commercially profitable enterprise, was under the circumstances undoubtedly much to the point. The municipalities, at which the Reichsbank's attack was chiefly aimed, had no difficulty in replying that no less than 94 per cent of all their foreign loans (as of Mar. 31, 1928, see O. Mulert in the volume of the Verein für Sozialpolitik previously quoted, p. 38) were in fact applied to directly paying propositions, electricity being the biggest item. For municipalities very naturally approached the foreign investor with the most businesslike-looking part of their spending programs and not with plans for resplendent town halls, the funds for which were, nevertheless, set free by borrowing abroad for the former. The productivity of, at all events, a very large part of the total indebtedness, domestic plus foreign, both of public and semipublic bodies and of private concerns, is in fact open to doubt. Second, there has been a tendency to define "investment" so extensively as to make the term practically useless for our purpose. It is owing to this only that the impressive figures of real investment were arrived at, which have been compiled by the Institut für Konjunkturforschung (*Sonderheft* 22, 1930), and which at first sight seem to contradict our diagnosis of impoverishment, excess consumption, and interference of taxation with the "formation of capital." To begin with, investment within our meaning of the term means economical investment (*minimum* outlay per unit of net return): a railroad is, no doubt, an economic enterprise, but not everything that is spent on it is therefore an investment, however wonderful (and some German station buildings are not less than wonderful) it may be. This applies even to expenditure conducive to excellence

over 10 years to make good.[1] Conquests of political and economic positions were made in both cases, but net gains were insignificant in the recent case as compared to the earlier one. Also, practically the whole world lay before England's industry and trade in 1815 and instances of industries that had irreparably lost their previous positions, so conspicuous in postwar times (coal, cotton textiles, shipbuilding), were then few, if not altogether absent, the only danger zone being agriculture—which then stood for the "key industries" that now had to be "safeguarded."

In one respect, the frame of mind in which England encountered postwar problems in 1918 was curiously like that in which she tackled the situation of 1815. In both cases, return to the gold standard at par was considered, by dominant opinion, as a matter of course. The report of the Cunliffe committee,[2] which was appointed as early as January

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of service. That is also one of the reasons why part even of industrial investment must be looked askance at from this standpoint. A large part of the "investment" in agriculture, especially that part which merely covered deficits, was clearly unproductive. Moreover, public buildings do not constitute investments, any more than Louis XIV can in any useful sense be said to have invested when he built the palace of Versailles. But neither does housing unless the dwellings are let at rents which fully cover cost, the long-term rate of interest included. More than anywhere else it is here necessary to ward off misunderstanding by stating that the writer, if he thought his personal value-judgments worth presenting, would have to confess that he thoroughly approved of every single one of the, roughly, 11 billion marks that were spent on it from 1924 to 1928 (of which more than half was from public sources, 4 billions being loans at 3 per cent financed by a housetax levied from houses which inflation had freed from debt, the *Hauszinssteuer* introduced by the emergency decree of Feb. 14, 1924). This, however, is entirely irrelevant to our discussion. Relevant is merely that this was largely consumers' expenditure producing the effects of consumers' expenditure. Thus corrected, the impressive total of net investment amounting to about 39.5 billions, which the Berlin Institute presents for 1924 to 1928, dwindles to considerably less than half. It should be added that increase in inventories should be included only insofar as it is not due to inability to sell and that the figures for internal accumulation of concerns (undivided profits) must be interpreted in the light of the fact that there was a systematic downward bias in depreciation accounts, because, after inflation, the new gold values were very generally put at figures which were too low. The statement to be found in a recent study that two-thirds "of the [foreign] capital supplies made available to the German economy in 1924 to 1928 · · · were applied to extension of plant and equipment" is hence seen to be misleading. A good discussion of facts and problems, not quite however in accord with the views expressed in this note, as well as most of the relevant literature and material, will be found in E. Welter, Die Ursachen des Kapitalmangels in Deutschland, 1931.

[1] Great Britain's foreign investments reached the prewar figure, roughly 4 billion pounds, in 1931, but even then the presence of about 240 millions of short balances must be set against it. Also a significant change had occurred in the character, particularly the productive possibilities, of those investments.

[2] The laconic Bradbury report (Committee on the Currency and Bank of England Note Issue, 1925) brushed aside all questions of principle and can only be described as a practical clincher.

1918, does indeed contain matter that would have been uncongenial to some of the authors of the bullion report, but there is hardly a difference in fundamental principle between the two documents. In recommending speedy reestablishment of the gold standard at prewar parity—though without free coinage for private account—to be achieved by the accumulation of a gold reserve of 150 million pounds and the gradual reduction of the amount of paper money in circulation, it expressed a view and an intention which at that time undoubtedly prevailed. This must be accepted as a datum of the situation.[1] In order to understand it and the consequences it entailed, two things must be kept in mind. First, that decision was fundamentally extrarational, and all arguments that have been adduced for it, either from virtues of the gold standard in general—largely imaginary under the circumstances—or from the particular interests of England as the world's banker—which position was partly untenable in any case and, moreover, as much endangered as buttressed by that policy—were no more than *ex post* rationalizations of what really was a foregone conclusion and to many minds involved the national honor or, at least, prestige. Second, the public and especially those labor men who favored that policy were certainly not aware of the sacrifices—great or small—which in the short run it was bound to entail. And those responsible men who may reasonably be assumed to have been aware of them seem to have overlooked that 1918 was not 1816, *i.e.*, the fact that their policy would have to work in an uncongenial social environment. What the public wanted and what the "responsibles" were driven back upon thus amounted to an attempt to swim the channel without getting wet. Perhaps it is surprising that the impossibility of playing the orthodox game just in one sector of national policy while it was clearly up in every other should not have occurred to bankers and

[1] By considering that *volonté générale* as a datum, the writer merely wishes to stress a fact which is relevant to his narrative. But, as the text will amply show, he has no wish to "justify" it. Since many eminent English economists feel so strongly on this and cognate points, it will be conducive to better understanding to state expressly that the writer largely agrees with the advice and criticism offered by some of them at the time and later, in particular with the practical upshot of Mr. Hawtrey's arguments. As will also be seen, he rates at a lower value both the effects of the monetary policy pursued and the possibilities of available alternatives. And he does not think it irrelevant to speak of the effects that policy might have had if other elements of the economic and social pattern had shaped differently. But within a *clausula rebus sic stantibus* he believes Mr. Hawtrey to have been, in the main, right as far as practical policy is concerned. The opportunity may be taken to add an analogous statement with respect to other matters of England's economic policy, which have to be touched in passing. In particular, there is not only no intention to attack the policies recommended by a brilliant group of English fellow economists, but in many if not in all cases the writer entertains no doubt whatever about the wisdom, *ex visu of English short-run interests*, of the advice proffered by them. This is perfectly compatible with great differences in theory and diagnosis.

politicians. Perhaps it is not. But in any case the ultimate failure must be understood in this light and not in the light of any *general* merits or demerits of such a policy, which are an altogether different matter.

Actual "deflation" (in the sense of reduction of the amount of circulating medium without a corresponding reduction in physical volume of transactions) was attempted but, meeting with resolute resistance to the necessary adjustments, was given up quickly. All the government did beyond liquidating war expenditure was to reduce the circulation of currency notes.[1] The Bank continued its efforts to accumulate gold. Its stock of coin and bullion fell slightly in 1922 but almost reached the Cunliffe goal by 1925 (at the end of the year, 144.6 millions) and surpassed it in 1926 (at the end of the year, 151.12 millions). Notes in circulation roughly moved in step until 1927. Other Securities were close to their 1919 figure both in 1924 and 1925. Other Deposits fluctuated strongly around a level that declined but little from 1919 to the end of 1921. Total Clearings fell in 1921, *when Deposits of London Clearing Banks were still increasing*, and began to recover toward the end of 1923 (see below, Sec. F). This, for the moment, is all the background we want. It also suffices to assist the reader in forming an opinion how much the monetary element as such can possibly have had to do with the crisis of 1921 and the slowness of the recovery in the two subsequent years. So far the analogy with the course of events from 1815 to 1821 stands out suggestively.

Meanwhile, the pound was practically left to follow its course. On the cessation of American pegging, it had begun to fall, discount reaching its high point, 34½ per cent, in February 1920.[2] But it speedily recovered and hovered around a 10 per cent discount in the summer of 1924. This recovery cannot to any great extent have been due to the actual measures (excluding speeches) taken by government or the Bank. Nor can it be fully accounted for by the fall in price level that had occurred but in the main was an international phenomenon. Much more important was that same factor, which subsequently also made the last step so temptingly easy: by that time the whole world was expecting that England would return to the prewar parity and, hence, was buying sterling exchange. The temptation proved irresistible: the hope that gold would internationally fall to meet the pound was, to say the least, vague; the domestic situation offered but little ground for optimism; real success in the sense of achieving a gold standard that would normally work

[1] There were 367.6 million pounds of them in 1920 and 295.6 millions in 1925. Later measures dealing with them need not be discussed in this book.

[2] An official embargo was laid on gold and silver, but it merely continued a state of things which, by patriotic discipline, had obtained throughout the war. After that official embargo had been lifted, attempts were made amidst the difficulties that ensued to resort again to the latter method by frowning on gold exports, mobilizing public opinion against operators, inducing shipping companies to raise freights for gold, and so on.

at prewar parity was for the moment out of the question; but technical success was within easy reach. Short balances flocked to England to profit from a rise that was a practical certainty, and by December 1924 the pound was no more than 1½ per cent below parity. The only difficulty was in the dangerous pressure which was to be expected the very moment parity would be reached. For then speculation would naturally realize and withdraw. Against this danger several defenses were built up. An American credit constituted one safeguard to be used if necessary after the event. The second safeguard was a bank rate of 5 per cent, which the Bank was careful to make effective.[1] The third consisted in keeping the pound down until as nearly as possible the moment of the plunge. This was successfully done by buying up foreign exchange, ostensibly for the purpose of servicing the debt to the United States.

Once we accept the goal, nothing but admiration can be felt for what once more was a very fine piece of steering, that not only achieved technical success but, in doing so, also avoided jerks and jolts and minimized injury to the economic organism. Reasons will be offered (Sec. F) for believing that the Bank's policy continued to deserve the latter compliment during the subsequent years. By adroit use of gold devices and masterly handling of the short-loan market it undoubtedly made the best of very delicate situations. It is nonetheless clear that the Gold Standard Act marks not the end but the beginning of the real difficulties. On the face of it, the new gold standard was untenable and bound to break down—if worked according to classical principles—through an unavoidable efflux of gold. Obviously, the Bank and the government must have hoped that it would be possible for a time to maneuver so as to avoid the latter and that during that time domestic or international developments would resolve the dilemma. The first proved, in fact, possible, the latter failed to mature. It is at this point that the difference begins between the course of events after the Napoleonic war and the course of events after the World War of our time. Then, drastic readjustment, by means of monetary policy, of the price level and of incomes would have been possible, but vigorous evolution of the national economy made it unnecessary. Now, no comparable development setting in, drastic readjustment by monetary policy would have been necessary, but it was not possible. The very fact that substantially similar monetary policies produced such different results and that hardly any difficulties of a purely monetary kind were encountered in the one case, while difficulties of this nature eventually proved insuperable in the other, should convince anyone that monetary policy has no claim in a *general* theory to the key position

[1] Great funding operations coupled with the reissue of about the same amount of treasury bills achieved that end. On the other hand, banks were made to understand that foreign lending was not for the time being considered as in the national interest ("embargo on capital export").

allocated to it by some economists. It is no contradiction—but, on the contrary, a trivial corollary—to say that if all the other elements of the social and economic setup are taken as given and if we are left with monetary policy as the only variable, the latter will acquire a causative importance and, in particular, become, if incompatible with the rest of the setup, a depressing external factor. This is what happened in our case and what defines the role of England's monetary policy in her postwar cyclical process. Overvaluation of the pound—putting a bounty on imports and penalizing exports—and a bank rate abnormally high under the circumstances are two familiar instances of its *modus operandi*, although we should not overestimate the importance of either.

Thus our argument leads, *in this sense*, to agreement with those English authorities on money who hold that, all other things being as they were, the return to the gold standard or the return to it at prewar parity spelled pressure that aggravated difficulties and could have been alleviated by another monetary policy which in turn need not have produced other difficulties. Much more important for explanation, however, although under the circumstances perhaps not for practical advice, were some of those other things. Neither monetary policy nor the fact that England's domestic and international position was not so favorable in 1918 as it was in 1815 will sufficiently account for what is universally felt to be unsatisfactory economic performance. The fundamental social change, which must destroy the frame and atmosphere conducive to the working of the capitalist engine at maximum efficiency and which we have tried to analyze in Sec. B, is, with the exception of Russia, nowhere so obvious as it is in England. The difference between what Parliament did with the income tax respectively in 1816 and in 1918 is a significant symptom even for those who refuse to look upon it as a cause. England's fiscal policy[1] characterizes a social situation which hardly displays any symptoms that might be interpreted in the opposite sense.

What is typically English in this, however, and what strikes any outside observer more than anything else is the unrevolutionary form of a change which, among other things, involved as great a transfer of wealth as was ever effected by any revolution, the Russian one alone excepted. By this the writer does not intend to refer only to the absence of a violent break of legal continuity but to the much more relevant fact

[1] As we have seen in Chap. VII, the roots of that policy reach far back. Let us recall, however, that the earliest conspicuous landmark in a long development was the first budget of the Campbell-Bannerman administration (Asquith; Mr. Lloyd George's "people's budget" was the second major step). The essential point was the earmarking of part of the surplus that resulted from Boer War taxation for the purpose of financing old-age pensions instead of applying it to the reduction of taxation or debt, which would have been the "classical" measure to take.

of continuity in the personnel that mans the political ship. The sociological pattern of that personnel changed, no doubt, significantly. But it did so slowly. And what at any time was the old stratum succeeded in absorbing new elements both in the sense that it readily received and in the sense that it effectively assimilated rising talent. This was possible only because the old stratum itself—or its more active elements—had an altogether unique ability to accept and to handle fundamentally new situations and principles. The set of people for whom ruling is more important than the purposes and interests to be served by ruling is in England larger and more influential than anywhere else. That set carried free trade in corn, although it was at the time controlled by agrarian interests, and through generations managed both domestic and foreign policy entirely from the standpoint of a bourgeoisie, with which it was more or less allied but by no means identical. There is, thus, nothing—short of very great inconvenience—to stop it from repeating the feat and running a Labor party or even, without doing this, running the country by means of a Conservative party on Labor lines, scaling off, no doubt, rough edges but not altering the fundamental contour of events. To a certain extent this is what actually happened in the postwar period,[1] and the fact that England emerged from the war in a substantially conservative mood—which was intensified, if anything, by the social unrest, the outbreaks in England, and the revolution in Ireland in 1920—and subsequently kept Conservative administrations in power for most of the time, can hence not affect our diagnosis or its implications for the mechanism or the results of the cyclical process. Again, nothing the Labor party actually did, either in office or out of it, can with any confidence be pointed to as a major cause of disturbance deflecting the economic process from the course it would otherwise have taken. Its short spells of power and its strong position in the country are relevant for us merely as indications of the changes that have occurred in social structure and atmosphere. In financial matters, in particular, it was eminently "sound" in the orthodox sense.

[1] Many Englishmen will not agree to, and even be irritated by, the above statements. But this disagreement is easily accounted for by the difference in standpoint between the man in the thick of the game and the mere observer. For the one, the individual measure matters in all its details, and in fighting for his points he will use, and have to use, a stereotyped phraseology that knows no colors except black and white, not less but more so when the actual colors shade off into each other. For the other, nothing matters except broad results and very simplified contours. Also, Englishmen who struggle with the less mobile elements of their own environment will, no doubt, be unable to see what strikes the writer as extreme adaptability to new situations and principles, if *principles* be the right word for attitudes or opinions that are so easily jettisoned without sterile regrets. Yet that adaptability is a provable as well as most important fact. Peel and Disraeli were masters of an art that has, obviously, not been lost.

War financing, too, had been on classical lines. The writer finds it difficult to understand the critics who were not satisfied with what to him seems admirable performance. The postwar budget of the coalition government has, however, repeatedly been criticized on the score of—epithet to be inserted by the reader, *e.g.*, meritorious, nefarious, beneficial, abominable—extravagance. This is relevant to our subject because it shows that rapidity of liquidation of war expenditure can hardly be invoked in explanation of the subsequent slump, except in the sense that continuance of war expenditure *at an increasing rate* would have avoided it for a time. Subsequently, expenditure was normalized, but on a level about four times as high as that of 1913–1914. The excess profits tax was abolished. Of other adjustments we need mention only the reduction in the flat rate of the income tax from 72 pence in the pound, in 1918–1919, to 48 in 1925–1926. Glancing at the state of things in the latter year we find that expenditure of the government as per Finance Accounts (which include transfers to local authorities and payments to North Ireland, but not other local expenditure) was 826.1 million pounds and revenue 812.1, deficit turning into surplus if we deduct the 50 millions applied to the reduction of debt. This compares to about 198 million pounds, at which accounts roughly balanced for 1913–1914. Revenue of local authorities from rates was 166.1 million pounds in the later fiscal year, as compared with 79 in the earlier. Opinions differ widely as to the choice of an index by which to reduce those figures to comparability. It is sufficient, however, to state that while total money income of the inhabitants of Great Britain and North Ireland about doubled between the two years, total public revenue increased to about 3.4 times its former amount, which, looked at from the standpoint of intact capitalism, was already extremely high. Unlike German public spending, that of England, especially in its permanent elements, displayed some stability for several years afterward and never outran revenue to any serious extent. The Consolidated Revenue and Expenditure Account of government, local authorities, and social insurance always showed a surplus.[1]

Fiscal policy undoubtedly interfered with the saving-investment process, however.[2] This effect becomes still more obvious if we take

[1] *Cf.* C. Clark, National Income and Outlay, Table 59, pp. 140 and 141.

[2] According to Professor Bowley and Sir Josiah Stamp, The National Income 1924 (1927, p. 57), out of an Aggregate Income of 2,020 million pounds in 1911, 320 millions were saved and 225 paid in rates and taxes; while out of the 1924 aggregate of 4,165 millions 475 were saved and 855 paid in rates and taxes. Very roughly, the amount "spent freely" increased as Aggregate Income, *i.e.*, doubled; the amount saved increased by one-half, *i.e.*, less than price level; the amount paid in rates and taxes increased to more than 3¾ times its former figure. We may differ, of course, as to the effects on the economic process of this absolute fall in real saving and this relative fall in monetary saving. But it would be

account of the fact that the burden of taxation was not only increased but also shifted in a way that cannot have failed to affect saving and accumulation. Neglecting the excess-profits duty and the tax on corporate business, taxation of inheritance and income yielded about 74.5 millions in 1913–1914 and about 389 in 1925–1926, and though consumers' expenditure of the payers of these taxes was certainly curtailed—nobody at all familiar with English life can have any doubt about that—the greater part, perhaps two-thirds of the difference of 240 million pounds, which we arrive at if we double the prewar figure in order to make it roughly comparable, must have come out of potential savings or, in some cases, out of dissavings. The implications of this—see above, *sub* 2 and *passim*—may be distasteful. All that can be replied is that it is really a pity that facts have a way of verifying views which are so obviously antiquated. For the symptoms we simultaneously observe in the economic organism are exactly what old-fashioned economists (whose theories the writer, as this book amply proves, is in general very far from sharing) would have expected to follow from such a fiscal policy.

Those implications are not weakened, first, by the fact that relatively moderate but not negligible amounts were spent on subsidies to business —agriculture, air transport, the merchant marine, coal mining, the beet sugar and other industries. Nor, in the second place, is it relevant that other lines of expenditure will command the support of most of us and that still others certainly "increased productivity." Policies of social betterment, for example, accounted for about 16 million pounds in 1912–1913 and for about 72 in 1925–1926.[1] Also, it must not be forgotten that improvements of the environment, however beneficial, do in most cases fail to link up with the tax that finances them in such a way as to neutralize its economic effects. There is, for instance, no doubt that if government action involving expenditure could reduce precipitation in the Lake District, the nation's enjoyment of that delightful country would be greatly increased. But a general tax levied for the purpose would act as a net burden all the same, and the benefit would simply enter into the general environmental conditions exactly as if, instead of H. M. Servants, Jupiter Pluvius had wrought the change gratis.

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highly unreasonable to deny that this fall itself was mainly due to the increase in taxation. The use of other estimates could not affect the result substantially. We shall, however, see reason to suspect (see *infra*, Sec. F, II, 1) that all estimates greatly exaggerate the amount of saving, which actually was far smaller than 475 millions.

[1] Those are estimates of the Statistische Reichsamt, Staatsausgaben von Grossbritannien, Frankreich, Belgien und Italien 1927. A subjective element enters into the various definitions between which one must choose. Besides, the different economic situations entailing—also for reasons that have nothing to do with taxation—more unemployment in the one case than in the other must be taken into account. For our argument all this matters but little. We are not criticizing.

Finally, third, it must, in view of a not very creditable discussion that has arisen about the point, be emphasized that taxation for the service of the 5.9 billions by which the domestic national debt had been increased in consequence of the war, cannot be left out of account on the ground that it effects a "mere transfer." It is true that an internal debt in some respects raises problems which differ from those presented by an external one. It is also true that this type of expenditure does not reduce the amount of factors of production available for industry, as expenditure on additional policemen would in a case of full employment. But exactly in the same sense—though in no other—in which expenditure on disabled soldiers is a burden, expenditure on disabled capital is, too. Its effects on those who pay the corresponding taxes are the same as the effects of taxes levied for any other purpose. And no gains of either class of recipients balance this loss: both the disabled soldiers and the owners of the "capital" which financed the war live, without contributing, on the results of the productive efforts of the rest of the community, while otherwise they would have been earning wages and interest by increasing the national dividend. No talk about "putting money from one pocket into the other" avails against this fact.

Other effects apart, this fiscal policy enforced recourse to foreign short balances in a way that presents some analogy with the German case. The sober management of the budget prevented, indeed, a "consumers' prosperity" in the German sense from developing; and part of the English short borrowing links up with long-term lending abroad. But it still remains true that if taxation had not cut so deeply into potential savings, less foreign balances would have flowed in and many things, money rates among them, would have been different from what they were. However, the English situation, as pointed out above, more than that of any other country was influenced by circumstances affecting particular spots. These circumstances, such as the innovations which depressed coal mining, or the rise of native capitalism in India, which depressed the cotton textile industry, or the losses England's international position suffered in the fields of banking, shipping, and insurance, permanently altered the conditions of her economic life and were *for her* largely external factors. But they are much more important in the interpretation of her cyclical phenomena than whether banks buy more or less assets. Moreover, both her domestic and her international environment were bound to change at an increasing rate in the neomercantilist age. This in itself unavoidably imposed a radical change of policy. Cobden himself could not be accused of inconsistency—although, of course, he might still be wrong—if he now rose from the dead to preach the doctrine that protection, state enterprise, and managed money must be resorted to in order to transform the Empire into an ironclad world of its own.

D. Outlines of Economic History from 1919 to 1929.—A very rough sketch will be sufficient to convince the reader that all the major features of economic life during that period in fact conform closely to our idea of a Kondratieff downgrade and that none of them fights against the hypothesis which this turn of phrase implies.

1. We begin with the agrarian sphere. Both preceding Kondratieffs displayed within their negative phases prolonged agrarian depressions. We have seen that in causation and symptoms they differed sufficiently, as between each other and in each case as between countries, to cast doubt on any very broad generalization about them, particularly with respect to the "necessity" or "normality" of their occurrence. We have also seen, however, that certain properties of Kondratieff downgrades tend to produce depressive conditions in the agrarian world as a whole, and that agricultural innovations, if any, tend to produce in sectors of that world depressive conditions that may be important enough to create a picture of general agrarian depression. Obviously, this is what we find in the postwar period and what provides the first approximation into which it is easy to fit all the other factors of agrarian situations. But the latter are, nevertheless, important and should not be neglected merely for the sake of one-factor theories and one-remedy therapeutics.

Primarily, the fall in agrarian prices was a fall not in relative but in absolute price, *i.e.*, an element of the fall in the general price level. Such a fall is part of the mechanism of cyclical downgrades—of Kondratieff downgrades, in particular. As we have seen, it would not, in itself, suffice to produce an agricultural crisis, although it may adversely affect the welfare of the agrarian community if the farm prices of products fall more than the retail prices of the finished products which it buys.[1] "Crisis" may ensue, however, if the fall of the price level impinges on a debt situation that has developed from borrowing either for unproductive purposes—such as the acquisition of land—or for insufficiently productive ones—such as mere expansion. But in the United States and England agriculture had to face, as it had after the Napoleonic wars and, in this

[1] This, of course, is invariably the case. As to farm machinery, there is an investigation by the Federal Trade Commission (1920), which found that prices of farm implements were advanced by producers and dealers in 1917 and 1918 by more than was "warranted by the increase in their costs," especially in those lines which were practically controlled by one concern—mowers and binders, for instance—and on which the "premium for innovation" was more completely collected than on others. But it is true in general, that, partly owing to local dealers' margins and to freight, which together amount in some cases to about 25 per cent of the price paid by the farmer, partly to monopolistically competitive situations, prices of these things tend to be both high and rigid. Servicing, which the farmer cannot as a rule do himself, is also expensive. The same applies to most of the gadgets of modern life which the farmer buys as a consumer and, to a lesser extent, to finished industrial products generally, although some of these are supplied to him efficiently and cheaply and without any abnormal profit.

country, the Civil War, not that kind of fall in price level which is a normal element of the economic process in Kondratieff recessions and depressions, but the much more violent reaction of prices to the rise during the World War. Moreover, agriculture had been, to the extent indicated in the last section of Chap. VII, an innovating industry, or rather an industry that had innovations forced upon it which originated elsewhere, such as the internal-combustion engine, specifically agricultural machinery, electric power and appliances, new fertilizers. As we should expect, these innovations fully conquered and came to fruition in the downgrade, and they, as well as the locational shifts, which constitute the most important of agriculture's own innovations, sectionally reduced costs to a level on which large sectors were unable to compete: the food problem of humanity was, as far as the economic process was concerned, indeed definitively solved, but at the expense of the agricultural interest. Competition by other countries, development of which was accelerated by the war, harvests, conditions of demand,[1] international barriers, and other factors have to be inserted, however, to complete the picture as it unfolded itself from year to year.

a. Elaborating a little for each of our countries, we will first notice that in the United States the Bureau of Agricultural Economics index of prices received for farm products rose from 1915 to 1919 by 109 per cent, while the index of commodities bought by farmers rose, until 1920, by 94 per cent.[2] The year 1920 brought a moderate fall and 1921 a fall to 116 per cent of the prewar figure, from which the index of farm prices recovered quickly, to reach a peak of 147 per cent in 1925. Then it

[1] The above refers to the facts that demand tended to become inelastic in some countries, particularly in the United States, and that the impulse that had caused it to shift favorably all through the prewar time slackened in others (not in the United States). Also, new modes of life engendering new tastes and habits tended to reduce consumption of the heavier foods per head. But these facts have nothing to do with any shortage of either real or monetary purchasing power of consumers. This, as the course of wages in our three countries amply proves, is again—still more obviously than it was in the two other instances—a pure myth, except in the cases of Germany and Austria during their inflations. Protectionist policies have more claim to our attention.

[2] These indices are reproduced, for example, by E. G. Nourse in Recent Economic Changes, vol. II, 1929, p. 548. Newer and more extended investigations have not greatly altered the general picture. It is hardly necessary to point out the limits of the reliability of such indices, particularly of the nation-wide type. Since interest on mortgages, railroad fares, and other items on which farmers' receipts are spent did not move at all, or moved less than the index (taxes on farm property were in 1919, according to the same source, only 30 per cent above 1914), the case in 1919 was still more favorable than it seems to be at first sight. This only accentuates the subsequent reversal. Taxes on farm property rose within our period to over two and a half times the prewar figures, and the index of prices of the commodities bought by farmers never fell below about 150 per cent of those figures. Discontent was, therefore, understandable, especially if we take account of the rapid increase in wealth in the industrial sector. But discontent is not crisis.

fluctuated on a moderately falling "trend" up to the eve of the world crisis. This development must be correlated with the development of the agricultural debt.[1] Even in the (predominantly prosperous) prewar years total farm mortgages were considerable—3.3 billions in 1910.[2] They rose to 237 per cent of that sum by 1920, quite enough to produce many untenable situations, even if we take into account the fact that incomes had risen more than farm prices, and afterward fell less than they did. But to 1925 there was a further increase to about 9.36 billions, the peak that occurred in 1928 being but insignificantly higher—9.46. Now, some part of this load probably was the result of funding short-time debts which had become irksome, and a greater part, the result of expansion and of the mechanization to be mentioned presently. But the correlation of the two periods of increase with rising land values is obvious, and the inference is unavoidable that much of this increase in debt came from purchases of land with a view to reaping not harvests but increments of value.[3] So far, then, we conclude: there was a short and sharp crisis in agriculture in 1920–1921, which was part of the general postwar slump, though accentuated for agriculture through the burden of partly unproductive debt. In the years to 1926 there was, however unsatisfactory the situation may have been from other standpoints than ours, no general agrarian depression at all. After 1926 and to the threshold of the world crisis, the agrarian situation became increasingly unsatisfactory, but the only *general* cause of this was, again, the pressure of unproductive debt.

But this diagnosis misses, besides many minor points, a major one, *viz.*, the influence of the innovations mentioned before. Some of them, like the progress in the cultivation of citrus fruit and vegetables or in refrigeration and canning, did not—or not materially—spell competition of some sectors or products with others, and brought a net addition to the

[1] Mortgages were, of course, only part of the total agrarian debt. But since part of the short debts were—in cattle ranching, for instance—really for the purposes of current business and not dangerous, we can confine ourselves, in a sketch of this kind, to the mortgages.

[2] Figures on indebtedness are taken from the publication of the Bureau of Foreign and Domestic Commerce on Long-term Debts, 1937, p. 107.

[3] Official publications are understandably careful in dealing with that delicate point. Still, the publication quoted in the preceding note goes so far as to say (p. 106): "The war and postwar period of rising land values and enlarged volume of land transfers resulted in a marked increase in the volume of farm mortgage debt, as mortgages were freely used to facilitate sales." In a country in which everyone speculated, there should be no shamefacedness about this. Remedies are not found by concealing the patient's ills. Moreover, although in some states that "free use of mortgages" went rather far, it is not held that the speculation in farm land in the country as a whole went to anything like the lengths it did, for instance, in New Zealand. In Mississippi, 83.7 per cent of farms were mortgaged; in West Virginia, only 32.6 per cent. The point under discussion has been officially recognized. See, for example, Secretary H. A. Wallace's statements in The Agricultural Situation, issued by the Bureau of Agricultural Economics, June 1, 1937.

total of agricultural incomes. To a lesser extent this is true also of poultry and cattle rearing and of dairying.[1] Others, like some electrical appliances, even helped sectors that were being put out of existence by competition, especially those whose main difficulty was dear labor. But most of the improvements in the methods of agriculture, while instrumental in bringing forth agriculture's share in that rising tide of consumers' goods which, according to our schema, is a feature of Kondratieff downgrades, and even producing agricultural prosperity in wide sectors of the country,[2] tended to push certain regions below the margin of profitable production. This, of course, is wholly true of the productive success achieved on reclaimed, drained, irrigated lands and of the process by which large areas have been taken into intensive cultivation of crops and into horticulture that previously served purposes of "extensive" farming. But it is partly true also of the truck, the tractor, most of the machinery newly introduced into grain farming, and to some extent of the use of electrical power. Most of them increase the optimum size of the farming unit, some of them can be used to full advantage only under the particular conditions of the Great Plains. From 1920 to 1930 the number of motor trucks increased from 139,000 to 900,000 and the number of tractors from 246,000 to 920,000.[3] The latter invites the combination of operations that were previously quite distinct, ploughing and the preparation of the seedbed, for instance, and thus steadily leads to ever-increasing mechanization. The use of the combine harvester, which had first been a success in California, spread and yearly sales increased nearly sevenfold in the same period. Cotton- and corn-harvesting implements must be added, but no further examples are necessary in order to establish our point. Nothing of all this was fundamentally new; all of it is typically "induced development" of the kind which on previous

[1] An eminent politician, instead, professed himself shocked at finding that Wisconsin milk and milk products are being sold in Georgia; but neither farmers nor economists are likely to share the feelings he obviously entertains on the subject of national division of labor.

[2] That prosperity was, however, less accentuated than might have been expected, not only because profits had to be shared, as pointed out before, with the industries that were responsible for the innovations, but also because of the perfectly competitive character of agriculture, which responded to the lowering of costs by a prompt reduction of the prices of products. This is what, together with the fact that the undersold units did not promptly disappear, created that impression which is sometimes conveyed by the phrase "agricultural overproduction." If the implication is that farmers are to "blame" for their plight, the reply is in order that, by behaving as they did, they fully rendered the social service that circumstances enabled them to render. In any case, however, that phrase is misleading, for the state of things envisaged was not simply overproduction in the ordinary sense of the word.

[3] The low-priced tractor (Fordson, International Harvester), in particular, did not come in before 1915.

occasions we found to be characteristic of Kondratieff downgrades. Our old formula, Depression spotted by Prosperity, fits the case as it did the others.[1] Emigration from agriculture to industry was, under the circumstances, from the standpoint of the logic of the capitalist mechanism, a perfectly normal phenomenon of adaptation.

Other aspects of the same features and some additional features of the postwar agrarian situation will come into view if we glance for a moment at cotton and wheat in particular.[2] Ever since the beginning of the nineties the price of cotton moved fairly well with any all-commodity index, domestic consumption of cotton—also roughly—with any index of industrial production. This on the whole remained so in our period, the chief exception being the rapid recovery of cotton consumption in 1921, right from the beginning of the year. Quantity exported was below the average of the last prewar years in 1922 to 1924, but roughly on the same level, or somewhat above, in 1924 to 1929, value rising sharply from 1921 to 1925 and receding afterward. Rayon was only one of the competing commodities that must have exerted some influence—with increasing wealth, the competition of wool increases in many lines—but owing to the emergence of new uses, such competition was of but minor importance; the standard fiber was still to come. There was the migration to lands made available by new methods of cultivation, especially to Texas and Oklahoma, partly due to the tractor and the mechanical picker (complemented by a corresponding innovation in ginning), with a consequent competitive annihilation of much of the Southeastern cotton farming.

In all this our process shows to perfection, and the process of labor being drawn away from an "old" stratum (toward the Northeastern industry) is particularly in evidence. Farmers' price of the standard

[1] It follows, of course, that "price parities" between agricultural and nonagricultural products are irrelevant for an appraisal of the degree of welfare enjoyed by the agricultural community. But "income parities," as between the agricultural community as a whole and the industrial sector, have not much more economic meaning. There is not more reason to expect agricultural prices or incomes to keep a certain relation to other prices or incomes than there is to expect that, say, coal and income derived from coal mining should permanently keep its relative position in an economic world that is incessantly being revolutionized. If for extra-economic reasons agriculture is to be subsidized—and there are many such reasons—it should be done without reference to any such parities between the present and a bygone state of things. But total market value of farm products, while it fell much more than money income of industrial workers in 1920, from that year on substantially kept pace with it. See M. Ezekiel, Evaluating 1933 for the Farmer, *Journal of the American Statistical Association* for June 1934, chart on p. 140.

[2] The same phenomena would stand out still better in other instances, such as rubber, coffee, and rice, which are, however, not products or not leading products of any of our countries. The studies on the Artificial Control of Raw Material Supply published in the London and Cambridge Economic Service (J. W. F. Rowe) should be mentioned.

quality rose from about 12½ cents to about 28½ cents during the war (the latter figure being of November 1918), which was perfectly normal and neither justified nor actually induced increase in acreage. Acreage harvested actually fell from its 1914–1915 peak. The ravages of the boll weevil in 1921, 1922, and 1923, however, raised it to 32 cents toward the end of the latter year, and this presumably propelled the expansion in the West, which in spite of abandonments—not all due to the boll weevil—had set in before and carried total acreage in this country from the 29.7 million acres in 1921 to about 45.8 in 1926. Acreage outside the United States at the same time increased from about 28.5 to over 42 million acres, not only, of course, in response to that price, but in consequence of the endeavor made in many countries to develop cotton growing, which date far back into prewar times and were indirectly fostered by the tariff policy of the United States. Thus there developed slowly, beneath the surface of current fluctuations, an untenable situation which was bound to curtail the role of American cotton in the world and to explode in a major depression. The presence of overproduction in the proper sense of the term is, in this special case, as undeniable as the rationale of the argument for planned retreat.[1] Cottonseed oil and its residues cannot be dealt with here, but their possibilities in the fields of human and animal food and of chemical products, although very considerable, would not fundamentally alter the picture.

The postwar wheat situation presents fundamentally the same features, yet differs in important respects. Before the war, United States production had indeed met increasing competition in the world's market —from Canada and Argentina, in particular—but effects were always compensated by favorable shifts in demand. After the war, this was no longer so. Although population increased strongly, consumption per head did not. On the contrary the latter decreased considerably in

[1] We are speaking, be it remembered, of the pre-crisis cotton problem, and the above is intended to submit that even before and independently of the world crisis there was a case for what we call planned retreat. It should be clearly understood that this means two different things. First, locational and technological innovation in the ordinary course of the cyclical process of evolution spelled distress for a great part of the Eastern cotton-growing industry. In a competitive industry dominated by types which do not in rationality and promptitude of action answer to capitalistic requirements, it is, of course, possible to argue for planning or relief in order to facilitate transitions, which in themselves are normal and unavoidable but which the people themselves are unable to effect, and to mitigate the hardships of the "competing-down process." But there was, in the second place, another case for planning, *viz.*, for planned reaction to planned expansion abroad. It is the latter that constitutes the special feature in the postwar cotton situation. Whether this country was to enter into competition with the new sources of supply opened up abroad or to retire from the international market is not under discussion here; either course would have involved planning by public authority in order to be successful. Into the implications of this for a theory of planning we cannot enter.

response to changing tastes and habits,[1] though the increase in the former was sufficient to increase total consumption, which at the end of our period was about 15 per cent above the average of the last five prewar years. Foreign demand rapidly fell from its war peak after the cessation of American war and emergency credits, both foreign competition and protection accounting for the sharply falling "trend" and, from 1926 on, the uninterrupted fall in quantity exported. World production, excluding Russia and China, after having decreased from 1915 to 1917, increased to 1928 by more than one-third and then moved about a level approximately 20 per cent above the last prewar years.[2] European production alone, including Russian exports, more than recovered in strongly inverse covariation with United States exports. Interpretation of these facts must, moreover, take into account the very low elasticity of domestic demand. Some economists hold that production adapted itself to the new conditions and point to the sharp decrease in acreage harvested per head of population that occurred from 1919 to 1925.[3] Production had, however, expanded considerably from 1915 to 1919 (the trough of 1917 was due to the failure of winter wheat) and though contraction followed fairly promptly upon the fall in prices, persisting excess capacity and that inelasticity of domestic demand would nevertheless account for strong effects of the fall in exports and of the variations in harvests.[4] It does not follow that, because the price of wheat moved very much as any all-commodity index, conditions peculiar to the wheat-growing industry had nothing to do with it. The argument for planned retreat thus again suggests itself.

But the central fact was the technological revolution.[5] The average yearly product during our decade of roughly 850 million bushels of wheat may not look formidable in itself. But it was not the result of harmon-

[1] But Domestic Disappearance of Flour, as calculated by the Stanford Food Research Institute (see Wheat Studies for December 1932, p. 310), fully kept pace with the postwar percentage of population growth. For grains in general the gradual elimination of horses and mules must also be taken into account.

[2] For Argentina, Australia, and Canada, taken together, increase as compared with the last prewar years was over 40 per cent. Excepting Argentina, there was not much increase in average yield per acre.

[3] See, for example, Warren and Pearson, Prices, Chart 42 on page 50.

[4] Only for 1918, 1919, and 1924 did good harvests spell good business for farmers. The poor crops of 1920 and 1921 helped to steady prices, and the decade's minimum crop (1925) brought what may be termed recovery values. But the increasingly good harvests of 1926, 1927, and 1928 exerted a pressure unknown to prewar times and led up to the collapse of 1929.

[5] This has, of course, never been entirely overlooked. But the paramount importance of that element of the case has been first pointed out by E. Altschul and F. Strauss, Technological Progress and Agricultural Depression, National Bureau of Economic Research, *Bulletin* 67, 1937.

ious expansion in all parts of the country, which it would have been possible to restrict again at proportionate and moderate sacrifice for every grower of wheat or which, in fact, would have restricted itself without catastrophe in the course of a few years of depression. It was the net result of spectacular expansion in some regions and painful elimination in others. Expansion was general up to 1919, even the East and South responding to war prices. But the really significant increase in acreage was not. That was confined to Montana, Kansas, Nebraska, Texas, and a few other states and, obviously, was not due simply to war conditions. Similarly, decrease in wheat acreage from 1919 to 1925 was general but also unequal, hardly any decrease occurring in Montana, for example. The subsequent expansion to 1929 coincided with restriction in the South and East, where acreage decreased by about one-fifth for the decade. Diagnosis of this course of events is obvious. Expansion was in the Great Plains, where the mechanized farm, the tractor and the combine thresher in particular, can be worked to full advantage and yield acceptable returns at a price of 60 cents per bushel or less.[1] Contraction was enforced where those innovations were not profitable and a price of one dollar per bushel covers cost only on the better soils. We recognize all the features embodied in our model and especially the "competing-down process," passing sentence of economic death on perhaps half of all wheat farmers. The implications of this do not concern us here.[2] But it must be added that this component of the postwar situation, in fact, originated, as it should, in the preceding Kondratieff prosperity. The great per-cent increase in Montana, Kansas, Nebraska, and Texas was from 1900 to 1915. We may even go so far as to say that this is what can be attributed to innovation per se, while the further rise to 1919—roughly, 10 million acres in the Great Plains—was a war effect. Innovation would have spread and taken full effect in the downgrade, as it always does. A depressive situation would, hence, have ensued in any case. But war prices and reaction to them accentuated it, which is all that prices or monetary factors have had to do with it.

b. For England and Wales, total value of marketed products of domestic agriculture was, in 1925, 225 million pounds, less than one-third of consumption. Two-thirds of that amount was value of animal products; less than one-fourth, value of cereals and potatoes. Total acreage in cultivation had not increased at all during the war—it had slightly fallen—and moved below the average of 1871–1875 throughout our decade. Prices, of course, behaved much as they did in the United

[1] See Mr. C. L. Holmes' report on Farm Production Costs as affected by Mechanical Farm Equipment, United States Department of Agriculture, 1931.

[2] That state of things, of course, accounts for the low average of farmers' income per head.

States; relative prices of animal products recovered strongly from 1924 on.[1] Income from agriculture, as per income tax statistics—which are not very reliable in the case of agriculture—rose to 1920–1921 (54 million pounds) fell to 1922–1923 (20.6 millions) and was then fairly stable (at about 24 millions) until 1929. In the absence of a dangerous load of debt, no untenable condition resulted. Investment that would not have paid was at a low level. But the medium-sized farm bore up well on the whole. It is obvious that no significant effect on the national situation can have been exerted. Neither was there any "crisis" until 1929–1930. There was, of course, the boom in the subsidized sugar-beet production, quantity harvested increasing from 56,000 tons in 1922–1923 to 1,472,300 tons in 1927–1928.

c. In Germany, inflation had reduced the agricultural debt from 17.5 billion gold marks (1913) to about 2.7, the amount eventually resulting from the revaluation of mortgages.[2] But it quickly mounted up again. By June 30, 1926 the debt newly incurred—mortgage and other, but not counting current debts with retailers and so on—amounted to 3.7 and by Mar. 31, 1930, to 7.66 billions. If to the latter figure we add 2 billions for unreported floating debts and the revaluation mortgages, we arrive for the end of our period at something like 12 or 13 billions, and at an interest charge of over 1 billion. In order to understand this, we must bear in mind the extent to which German agriculture and its equipment had suffered during the war. Considerable investment was necessary to restore it to normal efficiency. The inducement to run into debt was stronger for the larger estates, particularly in the East, because they suffered more from higher wages and taxes,[3] because they had more opportunity for trying out new methods involving investment, because their owners' standard of life proved less adaptable than that of the peasantry, and because it was primarily to them that expensive loans were offered from public and private sources with a readiness that proved

[1] There was, in spite of some increase in pasture, no significant increase in livestock. But dairy products and poultry did increase; 82 per cent of the butter consumed and more than half of the meat consumed in 1924 was imported, however.

[2] No account need be taken of the *Rentenmarkgrundschuld, i.e.*, the amount of 2 billion marks for which German land had been mortgaged by law in order to provide a guaranty for the *Rentenmarks* issued in the process of monetary stabilization. Agriculture had to pay 5 per cent interest on this, but there was really no capital debt. When the Rentenbank was liquidated (act of Aug. 30, 1924) it was succeeded (act of July 18, 1925) by the Rentenbankkreditanstalt, which took over its assets and served as an intermediary agency for the loans to agriculture that came from public and foreign sources.

[3] Taxes on agricultural land rose more in the West than in the East, *viz.*, from 8.8 marks per hectar in 1912–1914 to 37.6 marks per hectar in 1924–1926 in the West, and from 7 to 25.3 marks in the East. But net returns shaped much more unfavorably in the latter region than they did in the former.

fatal. Over 78 per cent of all holdings were eventually in debt in the West and almost 90 per cent in the East.

If we are to trust the figures presented in the official Survey of German Economic Conditions (Wirtschaftsenquete) for 294 medium-sized and large units, net returns per hectar, which were 93 marks in the average of 1912–1914, were practically wiped out in the average of 1924–1926. Another semiofficial source[1] gives 3 marks for 1924–1925 and 18 for 1925–1926. These, of course, were the very worst years until 1930 to 1932, and net returns recovered somewhat in the interval. Nor do such figures disprove the impression that a large part of the peasants, especially those in thickly populated sectors of the country, did quite well. But it seems impossible to avoid the inference that in many cases returns barely covered, or even failed to cover, taxes and interest throughout the period. As a result, foreclosures (as measured by acreage, not by number) rose above prewar level by 1926 and then steadily increased to a maximum of 1931.[2] This does not even tell the whole tale, because creditors may often have been prevented from foreclosing by the knowledge that bidders would not be forthcoming and because there were very many desperate situations which yet stopped short of technical insolvency. Prices of agricultural land were, it is true, even in 1929–1930 above prewar level,[3] but only for holdings below 20 hectar. For larger ones they were below that level, the more so, the larger the holding.

Diagnosis, though entirely different from that of the American and English cases, is not difficult. The technological component plays only a minor part. According to the census of 1925, German agriculture was then but imperfectly mechanized, even in the class of units above 100 hectar. The use of sowing, planting, and harvesting machinery was, of course, fairly widespread among the latter, but only a minority used steam and motor ploughs, for example, and the majority of peasants did practically without any modern machinery at all. Only 644,713 of the 5.1 million units used electromotors and the tractor had not yet invaded to a significant extent the domain of the horse,[4] the ox, or the cow. There was, indeed, great progress in fertilizing. Average yield per hectar was, nevertheless, for all grains lower in 1924–1928 than it had been in 1911–

[1] See Veröffentlichungen des Deutschen Landwirtschaftsrates, *Heft* 16. The data refer to the income statements of those units that reported to the Accounting Office (Buchstelle) of that Council of Agriculture, according to a set schema.

[2] After that, foreclosures were drastically reduced by various government measures.

[3] See W. Rothkegel, Die Entwicklung der Kauf-und Pachtpreise für Landgüter und Stückländereien in the publication of the Friedrich List Gesellschaft on *Deutsche Agrarpolitik* I.

[4] There were in Germany (postwar territory) 3.8 million horses in 1913 and 3.7 in 1928. The use of horses in agriculture, hence, must have increased, if anything.

1913, and land in agricultural use had decreased.[1] Germany's dogged effort toward self-sufficiency was to come later. It must not be forgotten, however, that our comparison is with the results of the innovations of the Kondratieff prosperity, during which yield per hectar had greatly increased, and that we deal with national averages only, which veil significant differences between different regions. But such further innovation or spread of previous innovation as there was in our period hardly affected noninnovating sectors as it did in this country, because the dominant factor of the German situation was foreign competition: all domestic innovation did, under the circumstances, was to ease things for some regions or individual holdings.

For the same reason, the changes in consumers' habits mattered less than one might suppose. But while demand for meat, dairy products, fruit, and vegetables developed satisfactorily from the beginning of the period, there was a similar—though less pronounced—reduction in the consumption of breadstuffs per head, as there was in the United States, coupled with a shift from rye to wheat, which accounts for the (small) increase in wheat and the (greater) decrease in rye acreage,[2] the latter indicating the depressed conditions which, with the exception of 1927 and 1928, prevailed in the most important branch of Germany's production of grains. Those effects of a rising standard of life must also have influenced potato growing. Conditions varied greatly in different parts of the country, and the statistics of direct consumption and of the use of potatoes in hog and cattle rearing and as an industrial raw material present difficulties into which we cannot enter. The general picture is, however, perfectly clear. A technologically very rigid supply, which had developed in prewar times, proved too much for the market of a commodity that was in the process of losing its position as a staple food. The ensuing "surplus"—aided by a similar surplus of rye—partly explains the rapidity with which the hog population recovered from the massacre inflicted upon it as a war measure: in 1927 it surpassed its prewar figure. This and competition from the East and Southeast brought down the price of pork, so that all the most important products of Ger-

[1] From 1913 (postwar territory) to 1927 by about 300,000 hectars. But the figure should not be implicitly trusted. That decrease may be due to difference in methods of surveying. There was certainly no significant increase, however. Throughout this and the following chapter, the term "postwar territory" refers, unless otherwise stated, to the German territory as delimited by the Peace of Versailles.

[2] The rye acreage fell from 5.2 million hectars in the average of 1911–1913 (postwar territory) to 4.7 millions in the average of 1926–1928, while the wheat acreage rose from 1.66 to 1.69 millions. Conditions in wheat growing were relatively favorable throughout the period. Value of the harvest surpassed the average of 1908–1909 to 1913–1914, which was 721.5 million marks, by 1925–1926, when it was 791.2 millions. *Cf.* H. Paetzmann, Zur Lage der Deutschen Landwirtschaft, *Vierteljahrshefte zur Konjunkturforschung*, 1926, Sonderheft No. 3, p. 13.

man agriculture eventually failed, except locally, to cover costs and burdens.

Thus, we have before us the case of an industry which, if left to itself and other things being equal, would have had to contract ever since the late nineties. Protection and successful innovation enabled it to hold its own and even to expand during the Kondratieff prosperity. But in the downgrade the superiority of American opportunities—giving much larger scope, in particular, to mechanized farming—and the cheap labor of the countries to the East and Southeast of Germany were bound to assert themselves. It then became clear that her agriculture was unequal to servicing its rapidly growing debt and to the wage rates and burdens of the modern state—that its marginal value-productivity was hopelessly below the general national level. It is from this angle that the plight of German agriculture must be understood. The state of things could not be inferred from the behavior of prices, which were favorable in some cases, especially in those of milk and butter, and not obviously catastrophic in any case. The upsetting factors were on the side of costs. Recognizing this yet wishing to avoid the laisser-faire conclusion from this, public policy exhausted the arsenal of protection, prohibition (at first in the form of trade monopolies), reduction of railroad rates, direct and indirect subsidies, and also resorted to "internal colonization," breaking up a number of larger estates into small settlements. These measures and further borrowing kept things going until both gave way before the onset of the world crisis.

2. Next, the postwar building booms call for comment. Of their quantitative importance in the economic processes of the period it is very difficult to give an exact idea, but very easy to give one that is approximate. If, for example, we accept the statement contained in the 1929 Census of Construction, that building will on the average (directly) give a year's full employment to one man for roughly each $5,800 spent, and if we take into account the employment created by the production and transportation of building material (which we might now attempt to do from the data of the Federal Employment Stabilization Board and the Bureau of the Census) and in other subsidiary industries and, by way of secondary effects, in all industries, we cannot doubt that construction was the chief contributor[1] to the postwar business volume in this country as well as in the other two. This is no more unexpected than

[1] As will presently become clear, this does not mean that there was a one-way relation between building and the rest of the economic organism, or that the prosperities of the period originated in the building trade. No mere appeal to the quantitative importance of construction within the total of system expenditure would have any explanatory value. In most cases it is obvious that construction rather responded to than created conditions favorable to its expansion. The latter was the case only insofar as there was innovation in the building industry itself.

the postwar agrarian depression. Building booms, in particular booms in residential, public, and public utility construction, occurred in the downgrades of both preceding Kondratieffs—for instance, in England in the twenties of the nineteenth century, in all three countries before 1873, in the United States from 1878 to 1894. All of them, with one exception,[1] were stronger than any that occurred during Kondratieff prosperities.

Nor is this a mere matter of history. Taking, for brevity's sake, dwelling-house building only, we need but list the factors that would produce supernormal activity, in order to see that the general conditions prevailing in Kondratieff downgrades and revivals—more precisely, in the prosperity phases of the shorter cycles which run their course within Kondratieff downgrades and revivals—are more favorable to the occurrence of building booms than are the general conditions prevailing in prosperities. Falling rate of interest is one of them. High rate of increase in real incomes is another: from rising or constant money incomes of the middle and lower classes, accompanied by falling cost of living, new demand for better housing will naturally follow. Innovation in the building industry or its subsidiaries will work in the same direction because, like other innovations, it is likely to spread in recession. The rise in rents that occurs during Kondratieff prosperities supplies, barring a subsequent fall in money incomes—which, as we have seen, is not likely to occur—an additional stimulus. Finally, industrial evolution in general means industrial migration and, moreover, migration from the countryside to the cities, both of which create new demand for construction that is eventually provided for during recession. Of course there were, besides, other factors, unconnected with the features of the Kondratieff phase which happened to prevail. The omissions of the war period, both as to replacement and as to normal increment, constitute the most important of them.

a. In the United States the war did not interfere with either residential or other construction to anything like the same extent as in England or Germany, but such indications as we have leave no doubt about the fact that it was at an abnormally low level in 1917 and 1918.[2] At least in most parts of the country, a short-lived boom set in at the end of 1918, during which building costs rose sharply—by 25 per cent or more. This was followed by a drastic fall both in building activity and costs, and from the beginning of the fourth quarter of 1923 the postwar boom in residential building definitely got under sail. There was a setback in the

[1] That exception is the English building boom from 1895 to 1905. It set in during revival, but it persisted through nearly half of the subsequent Kondratieff prosperity.

[2] *Cf.* J. R. Riggleman, Building Cycles in the United States, 1875–1932, *Journal of the American Statistical Association*, June 1933.

second and third quarters of 1924; then a peak was reached in 1925, descent from which lasted to about May 1927; another peak occurred in April 1928. After that we have decline, which though at varying rates—in 1930 there was some retardation—continued to February 1933, with 1929 and 1931 displaying the sharpest falls. In apartment-house and hotel construction the maximum occurs in 1926, but the figure for 1925 comes near it and those for 1927 and 1928 are not much below it.[1] Expenditure on new, nonfarm, residential building, including hotels and clubs, is estimated by the National Bureau of Economic Research at 34 billion dollars for the decade.

Diagnosis of that boom, which was entirely financed from private sources, presents no difficulties. At the beginning of the period there was dammed-up demand. Population, in spite of the Immigration Restriction Act of May 1921, increased from 1920 to 1929 by 15 millions, the largest absolute amount of increase per year in the history of the country.

[1] On the sources of construction statistics and some of the pitfalls they contain see C. Gill, Construction Statistics, *Journal of the American Statistical Association*, March 1933. The above refers to values of contracts awarded and is mainly based on the data of the F. W. Dodge Corporation, which until 1932 exclude contracts of a value less than $5,000 and —an advantage from our standpoint—alterations and repairs. The data, steadily increasing in accuracy, specialization, and coverage, start in 1901, cover 27 states from 1922, 36 from 1923, and later on 37, from which the national total is arrived at by a multiplier. The writer wishes to acknowledge the F. W. Dodge Corporation's courtesy in answering his questions and permitting use of material. No other series of contracts awarded have been used except to test the writer's guesses as to particular questions. Building permits are available (Carl Snyder's series) for seven cities since 1882. Of other permit series, the annual one published by the Bureau of Labor Statistics—on account of its specialized information—and the monthly one published by the Federal Reserve Board have been most useful. But a report by the National Bureau of Economic Research, foreshadowing the results of a comprehensive investigation working with permits (D. L. Wickens and R. R. Foster, Non-farm Residential Construction, 1920–1936, *Bulletin* 65, Sept. 15, 1937) seems, on the one hand, entitled to so much confidence and, on the other hand, to yield results so materially different that the writer is now inclined to doubt the reliability of his own work in the matter summarized in the text. In particular, the second peak (1928) may be untrustworthy. Instead, new residential construction is held by the authors of that report to have declined steadily from the first peak (1925). But there is no difference as to the abruptness of the fall in 1929 or the steepness of the ascent in 1925. Physical volume (there are now, however, new estimates of numbers of units constructed, *e.g.*, L. J. Chawner's in the *Annals of the American Academy of Political and Social Science*, vol. 190) must be derived from those value figures by deflating. Several indices have been constructed for this purpose. They include, however, labor and materials only. The one used by the writer, published by the Federal Reserve Bank of New York, attributes (constant) weights of respectively 45 and 55 per cent to those two items (weighting according to the 1929 Census of Construction: labor 33 materials 47 per cent, other items 20 per cent). Professor Mills (Economic Tendencies in the United States, p. 267) rightly deflates the dollar volume of each type of building by an index appropriate to it. The reader is referred to his treatment of the subject. But from 1925 to 1929 all cost indices change so little that the general picture is affected by deflation only for 1919 to 1924.

There was also considerable internal migration. Real income per head, rising strongly in all brackets, made that demand effective and added new sources. The motor was the only other "expensive" one of the items toward which the surplus turned. From 1916 to 1920 rents had risen on a national average by almost two-thirds. They fell but insignificantly, even in the crisis of 1921. Primarily the boom was a response to these conditions. Building costs rose swiftly in 1923 and after 1924 remained fairly stable on a somewhat lower level.[1] Interest on urban mortgages was, though falling,[2] not particularly cheap as compared with other long-term rates, except where building was financed by bond issues. But under the circumstances of that period and in the glow of its uncritical optimism neither costs nor interest charges mattered much. It seemed more important to get quickly the home one wanted—or the skyscraper the prospective rents of which in any case compared favorably with the rate on mortgage bonds—than to bother whether it would cost a few thousand dollars—or in the case of the skyscraper, a million or so—more or less, provided money was readily forthcoming at those rates. And it was. First mortgages on urban real estate represent, on the one hand, not all the loans that were made available for building and, on the other hand, also financed not only other types of building but other things than building. But it is still permissible to point to the fact that they increased from, roughly, 13 billions in 1922 to, roughly, 27 in 1929, building and loan associations contributing about 7.8, commercial banks about 5.2, mutual saving banks 5.1, life insurance companies 4.8, and mortgage bonds more than 4.[3] This increase is out of all proportion, not only with the increase in what can in any reasonable sense be called savings, but also with the expansion of bank credit in other lines of business, and illustrates well how a cheap money policy may affect other sectors than those in which it is conspicuously successful in bringing down rates.

[1] The increase in building costs in 1923 is beyond doubt. The decrease that occurred in 1924 was a few per cent only and figures out differently with different indices. No substantial reduction occurred before 1931, at least as far as *quoted* prices are concerned.

[2] It is interesting to note that the beginning of the boom—like that of the English boom of 1932 (see *infra*, Chap. XV, Sec. D)—preceded such fall as there was in mortgage rates. In this as in other cases it is perfectly clear that other factors are more important than interest, although our description sufficiently shows that the writer has no intention to deny its influence. Residential building fell off, however, at the very time bond yield began to fall more markedly.

[3] Those figures are taken from C. E. Persons, Credit Expansion, 1920–1929, and its Lessons, *Quarterly Journal of Economics*, November 1930. They differ somewhat from those of J. H. Gray and G. W. Terborgh, First Mortgages in Urban Real Estate, Report for the Real Estate Research Committee of the Brookings Institution, 1929. Both estimates exclude second mortgages and other items. Professor Irving Fisher, Booms and Depressions, 1932, p. 173, puts the total nonfarm mortgage debt in 1929 as high as 37 billion dollars(?).

If such a sector display a very elastic demand for the funds which that policy will drive toward it, interest in it need fall but little or not at all in order to produce all the consequences that we usually associate with "too-low" money rates.

Innovation lent its aid. The steel-skeleton structure, made cheaper by steadily increasing use of reinforced concrete and workable by the electric elevator, had created new possibilities ever since the nineties, and these possibilities had become realities—and a feature of—the Kondratieff upswing. In the downgrade after the war this innovation, improved by several minor and "induced" ones, propelled by changes in the habits of life that made the apartment increasingly desirable to the American bourgeois family and by the plethora of credit, spread and conquered, much like motorcars or rayon and exactly like those innovations that carried the prosperities, and spread in the downgrades, of preceding Kondratieffs. Similarly, prefabrication, primarily made possible by the use of the new materials but also applied to stone and lumber, extended its domain far beyond the skyscraper. Excavation of basements by means of power shovels improved by the caterpillar tread and belt and bucket conveyors, the use of power hoists, of power concrete and mortar mixers, and of pneumatic riveting machines, rapidly became a matter of course for contractors in all lines of building[1]—typical downgrade developments, all of them. Their full effect—the mass production of the perfectly standardized and mechanized cheap house—is still to come, however. During our period the ordinary family house was in the main still being built in substantially old-fashioned ways by small and inefficient firms.

But the conclusion that this essentially consequential development—in response to the omissions of the war period and increased real purchasing power of all classes, on the one hand, and in response to previous innovation, on the other—issued in overbuilding, owing to the additional stimulus imparted by the monetary factor, must not be accepted hastily, however plausible it may seem. Some types of response to those conditions, especially the ones that were linked to speculative real estate operations, were clearly of the bubble class. The Miami case may serve as an example. Nor can there be any doubt about the merits of the financial methods that were also used in less "speculative" cases—New York skyscrapers for instance—and in particular about the financial quality of the mortgage bonds, which increased from 682 millions in 1922 to 4,169 millions in 1929, and which were readily lent against by banks. Finally, everything was done to make it easy for everyone to run into debt, for the purpose of building a home as for any other purpose. It is indeed, easy to understand that such a structure would give way, not

[1] See Jerome, Mechanization in Industry, pp. 134-145.

only under the impact of a serious crisis, but even in consequence of a mere failure of rosy expectations about things in general to come true. In other words, we shall readily understand why the load of debt thus lightheartedly incurred by people who foresaw nothing but booms should become a serious matter whenever incomes fell, and that construction would then contribute, directly and through the effects on the credit structure of impaired values of real estate, as much to a depression as it had contributed to the preceding booms. Nothing is so likely to produce cumulative depressive processes as such commitments of a vast number of households to an overhead financed to a great extent by commercial banks. But this does not quite amount to saying that there was overbuilding in the sense that the amount of construction was greater than it was possible to absorb without losses under the conditions then prevailing, and that this excess was an independent cause of the great depression.

Rents fell from 1924 on,[1] but only moderately. Vacancies increased, but not more than was to be expected in a period of rapid obsolescence of existing house property. The big, old, ugly, and inconvenient house soon became difficult to sell, because of changes in tastes—some of them attributable to the automobile—and because of the increasing wages and decreasing efficiency of servants. But there is no reason to believe—in particular, the fact that the increase in dwelling units was greater than the net increase in married couples does not prove—that the spurt of 1925 could not have settled down into an appropriate average activity and that even the results of speculative excesses could not have been liquidated without any violent crisis in building, let alone in general business. As a matter of fact, this was accomplished to a certain extent. If we accept the figures of the National Bureau of Economic Research, we arrive at the conclusion that four years of such adjustment—including local crises—actually followed upon that boom without much general disturbance being created. In the final result, expansion in this line was not so obviously greater than it was in other lines of consumption that explanation of subsequent vicissitudes could simply be given in terms of "malinvestment." And incomes had first to fall because of a general crisis, for the special crisis of building and of real estate to come about.[2]

[1] All indices agree in this; there is, however, some doubt whether or not the national average temporarily increased again somewhat in 1926 and 1927.

[2] The reader is welcome to argue, if he feel so inclined, that the above comes to saying that all that would have been necessary in order to avert serious trouble would have been continued increase of incomes by means of, say, additional government expenditure. It is more important, as well as more useful, to point out that timely restriction was not the only alternative open under the circumstances. Much could have been achieved by devising more appropriate methods of financing by public or semipublic institutions, which might have kept commercial banks out of this business and created new forms of loan contracts less sensitive to the impact of depressions.

This analysis refers to residential building only. Results are not, however, substantially changed by including other types. One of them, commercial building, is perhaps still more than apartment houses and hotels exposed to the suspicion of speculative overdoing. Contracts awarded[1] increased steadily to a peak in 1927 and another almost as high in 1929, and summed up for 1922 to 1929 to nearly 6.7 billions, the rate of increase over the period being substantially in excess of that of residential building. Industrial building increased at a still greater rate—contracts awarded sum up to about 4.8 billion—but there is very little reason to suspect any excess over the requirements of the general march of things. Unlike the other items, but also conforming to expectation, this moved well in the Kitchins and showed equally well the sweep of the two incomplete Juglars.[2] Finally, more than one-third of the grand total[3] of contracts awarded—nearly 49 billions according to the Dodge figures, which certainly understate—comes under the heading of Public, Institutional, and Utility construction. Part of this is reflected by the increase in municipal bonded debts. Alone federal expenditure on new construction, repairs, and alterations amounted, from 1920 to 1929, according to the Federal Employment Stabilization Board, to about 2.5 billions, the trend being upward all the time and 1929 displaying the highest figure (308 millions[4])—a fact worth mentioning in view of the prevalent talk about insufficient spending. According to the same source, the figures of which are again incomparable with those used above, the expenditure of railroads—steam and electric—and power and telephone companies on construction and maintenance moved, from 1923 to 1929, extremely steadily on a slightly rising level, summing up to 20.4 billions. But these sums, of the importance of which those examples suffice to give an idea, were expended in ways that would not produce any material effect on the economic process beyond what is implied in the expenditure itself.

b. In Germany privately financed construction during the war was probably at less than one-fifth of the 1910 to 1913 average and in the end practically ceased. Some impulse was given to it by the "flight into

[1] According to the Dodge figures of value of contracts awarded. They must not be added to or compared with the National Bureau's estimates of residential building. For this purpose they would have to be increased, though presumably not as much as the Dodge estimates of dollar volume of residential building.

[2] The figure for 1923 was almost 30 per cent above that of 1922; 1924 shows decrease; 1925, over 30 per cent above 1924, indicates the rise of the fourth Juglar, which starts in the second half of that year; 1926 reflects prosperity in the act of gathering momentum; 1927 is influenced by the Kitchin depression; 1928 shows recovery; and 1929 brings the peak of the period (845 millions).

[3] It is worth while noticing that that total which reached its peak in 1928 was very stable from year to year, 1925 to 1928, and fell by 12 per cent in 1929.

[4] This expenditure then rose to new levels in 1930, 1931, and 1932. For this and the following statement, see C. Gill, *op. cit.*, pp. 39 and 40.

real values" during the inflation period, but this impulse ceased to act in the time of "wild" inflation. From 1924 to 1929 industrial and commercial building presents a picture not unlike the American one. It rose from 1.23 billion marks in 1925 to 2.16 in 1925, fell in 1926, more than recovered in 1927, and reached its peak of nearly 3 billions in 1928, when commercial and industrial contracts awarded in the United States, not yet at their peak however, amounted to about 6.7 billion *marks*. Though the latter figure understates actual expenditure to an unknown extent, it is nevertheless clear that, considering the difference in the size of the respective economic organisms, Germany did in this respect not much worse than this country. There was a small fall already in 1929, but for 1930, the further fall being but 11 per cent, the comparison is still more favorable. The total from 1924 to 1929 was 13.45 billion marks, about 1 billion greater than the total for public building—including roads and canals—which behaved similarly but fell off much more than business building in 1930.[1] Residential building was subsidized, as has been stated before. It is doubtful whether it would have revived of itself under the circumstances, since the rigorous control of rents of old dwellings absorbed part of the demand and made people unwilling to pay rents which would have covered costs. As it was, great building activity set in, expenditure steadily increasing to a peak in 1928—followed by a considerable drop—of 3.4 billion marks, which compares with about 3 billion dollars in the American peak year, 1925, or with 4.7 if we accept the National Bureau estimate: the comparison, however precarious, because residential building does not cover exactly the same things in both countries and for other reasons, is yet not without significance considering the difference in real income per head. The grand total for the period was 40 billions, to which residential building contributed 14 billions. Unlike the corresponding American amount, this sum largely failed, independently of any crisis, to give economic return.[2]

[1] The madness of this kind of reaction to the world crisis—for madness is the mildest term the writer can think of when placing himself on the standpoint of the gospel of spending—ceases, however, to be so obvious when the internal and external political situation and the previous fiscal policy are properly taken into account, see the following chapter. We should note here that, especially in the last years of the period, the financing, particularly of municipal building, was the last word in "unsoundness" and may compete with anything skyscraper financiers did in this country. In some cases such things as bridges were financed by six months' paper. The total may also have been understated, for some items were tucked away in municipal budgets of extraordinary reticence.

[2] The Survey of Economic Conditions (Ausschuss zur Untersuchung der Erzeugungs und Absatzbedingungen der deutschen Wirtschaft. Third subcommittee, Der Deutsche Wohnungsbau, 1931, p. 18) records the opinion that economic calculation was put out of operation (*ausser Kraft gesetzt*) in that field. Although intended to be cautiously reserved and perhaps the result of a compromise, the passage is misleading and even unjust. As pointed out, there was reckless financing and there may have been some waste. But

c. It was in August 1932 that the great English building boom began that was to solve the housing problem in the same sense in which it can be said that the development of the textile industries in the three decades following the Napoleonic wars solved the clothing problem and the development of agriculture after the World War solved the food problem of the masses—leaving many things to be done, no doubt, but only things of the second order of difficulty and importance.[1] That was the housing boom which corresponds to the American one in the twenties. The building activity during the period under discussion presents essentially different features. Our remarks will, however, be confined to residential building also in this case.

The general conditions of a Kondratieff downgrade would, *ceteris paribus*, have been as favorable in England as they were elsewhere to the occurrence of a housing boom. In 1912 and 1913 such a boom actually seemed about to develop in continuation of the one that started in the nineties. And after the war there was, of course, dammed-up demand; the number of marriages rose considerably, if temporarily, above the 1913 figure and so on. But other things were not equal, and one feature of Kondratieff downgrades failed for the time being to materialize: at least to 1924, per capita real income was not much higher[2] than it had been 10 years earlier. Hampered also by high costs, building therefore showed little tendency to revive in 1919. While in this respect the English was dissimilar to the American case, it was dissimilar to the German case, not only in the resources that were available to cope with the situation, but also in the sober spirit in which it was met. This spirit asserted itself in three ways. First, rent control, imposed during and continued after the war, was administered in a much more business-like way than in Germany. Second, private enterprise—especially large-scale private enterprise—was harnessed to the purpose rather than discouraged, and a workable mixture of public and private activity was experimentally found. One of the contributions of this policy to the boom of the thirties was precisely that it trained the building industry to its task, while at the same time the appetite of people who could afford to pay for better housing was being stimulated. Third, it was recognized *in fact*—whatever actual motives and phraseologies may have been—that the road toward satisfactory housing of the lowest strata led through

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extensive dwelling-house building was, under the general conditions of the time, the Kondratieff phase included, a perfectly normal phenomenon, and a public contribution toward the creation of satisfactory homes need not have created financial trouble.

[1] This is obvious in the case of food and clothing, and for housing conclusively proved by the Ministry of Health report on overcrowding in England and Wales, 1936.

[2] According to Professor Bowley, it was, if anything, somewhat smaller. The question will be discussed in Sec. E.

providing houses for that large number of families of intermediate position—skilled workmen, clerks, those in the lower ranks of the professions, and so on—whose incomes were adequate, or nearly so, to cover costs, and who needed but little direct assistance which would involve only moderate and calculable sacrifices to the exchequer, although guarantees might be required to make the structure of the necessary credit crisis-proof. Slum clearance would then do the rest.

This policy was adopted by the Chamberlain Act (1923 to 1929; amended by the Financial Provisions Act of 1924), which provided the backbone of the house-building activity during our period. The Addison Act (1919, restrictively amended 1921) had started the movement by vesting the task of building houses with local authorities and guaranteeing them against loss. The Wheatley Act (1924) again aimed chiefly in the direction of building by local authorities. But the Chamberlain subsidies really did the job. The effect of these measures, which eventually burdened the exchequer with not more than about 13 million pounds a year—a burden that was, moreover, compensated, at least in part, by the increase in revenue and (relative) decrease in unemployment expenditure which they at the time certainly entailed[1]—was to raise the annual number of units built above the annual average of the last prewar decade by 1924[2] and to a maximum of 273,230 units in 1926–1927, excluding houses above 78 pounds or, in the metropolitan area, 105 pounds ratable value. In all—counting in the tail end in the thirties, consisting of about 257,000 units built under the Wheatley Act—1,177,863 subsidized houses were erected at an estimated cost of 671 million pounds, local authorities being responsible for 756,298 houses and 419 millions, private enterprise for the rest. These subsidies tapered off from 1928 on and were, *pro futuro*, abolished by the Housing Act of 1933, when this policy had been abandoned in favor of direct attack on the problem of the lowest strata by means of slum clearing (Act of 1930). By then, however, conditions had begun to shape for the expansion of unassisted building, which increased in 1928, when subsidized construction fell off sharply—there was in the total a net decrease, of course—*continued to increase through* 1931, and, after falling but insignificantly in 1932, embarked upon its astounding performance.

No problem arises, however, for our period. The, roughly, 71,000 houses built without assistance in 1928–1929 still compare with, roughly, 133,000 subsidized units and are, if anything, less than could have been

[1] The theory of this is due, as the reader knows, to Mr. R. F. Kahn. In its bearings upon our case, the theory of Secondary Employment is not invalidated by Professor Neisser's criticism in *Review of Economic Statistics* for February 1936.

[2] That prewar average was about 100,000. In 1922 over 106,000 houses were built under the Addison Act, but this was due to an effort to profit from the act before the restrictions of 1921 became effective.

expected from the fall in costs—building costs only—to little more than one-third of the 1920 figure. Another factor, which in the thirties was to play so great a role was, however, gathering power all the time. Building Societies, the history of which goes back to the last decades of the eighteenth century and which, favored by public policy in many ways, had made considerable headway since the eighties of the nineteenth, increased their assets—mostly mortgages—which in 1918 were only about 5 per cent above what they had been in 1913, from 77.3 million pounds in 1919 to 312.7 in 1929. This increase, significant also for other purposes than the one in hand, was as steady as it was great. Together with their organization—ideally adapted to the financing of houses in the price range from 400 to 500 pounds—and their privileges, this made them the leaders in that line of business. Insurance companies were their chief competitors. The success of both is an outstanding symptom of the extent of the transfer of wealth that had occurred.

It is obvious, then, that during that period English residential building was primarily a function of subsidies and of expectation concerning subsidies but not, as in the United States, of cyclical phases. It shaped business[1] situations rather than being shaped by them and thus "disturbed" the course of cycles. Considering the quantitative importance of this influence we shall hence expect what, from the standpoint of our schema, would have to be called irregularities. As it happens, they are not very great. Needless to say that, even if they were, they would neither constitute a difficulty nor offer any basis for an objection to that schema.

E. The "Industrial Revolution" of the Twenties.—These processes were so entirely normal in the sense of conforming to expectation from our model and so obviously repeated the history of preceding Kondratieff downgrades that no war effects or other disturbances availed to obliterate the fact, and that recalling a few familiar features suffices to establish it.

First, *we should not expect to find fundamentally new things*, but rather induced and completing development on lines chalked out before and attended by strong increase in quantities, marked improvement in qualities, "rationalization" all around, an indefinite number of individually small innovations producing a wide variety of new specialties, the phenomena which we have called conquest of new economic space. This is what we find. The electrical, chemical, and automobile industries, which together with their subsidiaries and all that directly and indirectly hinges

[1] So did public construction, of course. For example, local authorities spent, alone through their gas, water, and electric departments, about 17.5 million pounds in 1924. Highways, harbors, wharves, docks, canals, sewers, embankments account for another 12.9 millions; roads and bridges, for 36.7.

upon them—the motorcar, for instance, is responsible for a great part of the total of postwar construction: roads, garages, gasoline stations, suburban residences—account for 90 per cent of the postwar changes in the industrial organism and for most of the increase in real income. They realized the possibilities created in the Kondratieff prosperity, continued to push ahead from the bases laid before, and *by so doing shaped things into a Kondratieff recession.* So did not only those subsidiaries, such as oil and rubber, but also the minor, though still important, novelties, such as steel alloys, aluminum, rayon, large-scale retailing, and the organizational and financial complement—persistence of the merger movement, power finance and so on. There were exceptions, as there were in the two previous Kondratieff downgrades, but none of them was quantitatively significant. The most important one was air transport on a commercial scale, which may bear comparison with the role of railroads in the thirties and of electricity in the eighties of the nineteenth century.

Second, we find all the general features which analysis and historical observation have taught us to associate with Kondratieff downgrades. This will become clear beyond doubt in our discussion of time series which is to follow, but it should be clear independently of it, that those features can be accounted for in terms of the system's absorption of and reaction to the new quantities and new methods. We find prevalence of unemployment[1] that was, however many other circumstances may have contributed to it, basically "technological." There was, though also accentuated by other circumstances, that excess capacity[2] which is inseparable from the process of rapid reorganization of the industrial apparatus and *coexists with vigorous expansion of output.* We observe that desperate struggle of firms for outlets[3] and against competition and the sagging of prices incident to the insertion of new quantities and capacities, which understandably creates the picture of apparently permanent

[1] On this and the two following points, see *infra*, Sec. F, I, *a*, 2 and 3.

[2] As has been pointed out before, during a process of expansion and rearrangement of this kind, normal utilization of capacity—if it be possible to speak of normals at all in situations which, though moving toward normality, are yet far removed from any normality—must always be considerably under 100 per cent, even apart from oligopolistic situations; and this does not necessarily imply any waste, much less, at any rate, than would an attempt "to maintain the profitable operation of moribund plants." See M. C. Rorty, The Equation of Economic Balance, *Harvard Business Review*, April 1934. To repeat, conditions in the production of raw materials reflect the same phenomenon in the form of "overproduction." With varying degrees of severity, such conditions prevailed throughout the period.

[3] One symptom of this was the orgy of advertizing. Expenditure on newspaper advertizing alone has for this country been estimated at a billion and a half for 1927, see Federal Trade Commission, Resale Price Maintenance II, 1931. There is no possibility of reliable comparison with prewar times, but the fact of steady increase of that item of expenditure from 1922 on seems beyond doubt.

"overproduction" or "overinvestment" and the characteristic outcry about people's inadequate power or willingness to spend. And, masked and retarded by resistance to adjustments, the competing-down process is clearly recognizable both within the relatively new and as between new and old industries, railroads[1] and coal being conspicuous instances of the latter. All of which accounts for much of the social and business atmosphere of the period, including its economic slogans.

Even in the comparatively "pure" case of the United States, "disturbing factors" must be taken into account. In the cases of England and Germany they are, of course, very much more important. Where they work against our process they are, qualitatively at least, not difficult to identify, and there is nothing objectionable in saying, for example, that international restriction of rubber production partly stands instead of *that* fall in rubber prices which would otherwise have ensued and that its very existence proves the tendency which to some extent it succeeded in paralyzing. Where, however, external factors tend to produce effects similar to those that the prevailing phase of the cyclical process tends to produce of itself, the difficulty sometimes spreads from measurement to qualitative diagnosis. We shall meet several instances of this throughout the rest of our way, the most controversial of them being the question of the effects of recovery policy. Here a single example may suffice. We have seen that in Germany factors extraneous to our process made for what was called a consumers' prosperity. But consumers' prosperities are also part and parcel of Kondratieff recessions, and it can be shown that some of the symptoms which that term is intended to cover, would have emerged, perhaps not much less strikingly, in the absence of those factors. Total effects are difficult to allocate.

1. English industry, as will be evident from the behavior of English time series (see *infra*, Sec. F, I) displays the characteristic features of the period much less markedly than American or German industry. This, as has been explained in the preceding sections, must be understood from the sociology of her case, from the way in which England's economic position was affected by the war, and from developments in other countries that deprived her of economic elbowroom. The latter two factors show in the fortunes of her export trade, which recovered slowly from the drastic fall in 1921—exports of manufactures and coal amounted to 1,220 million pounds in 1920 and to about half that sum in 1921—and never reached the physical volume of 1913 again. The latter increased from 1925 to 1929 by a little more than 8 per cent (values in current pounds fell), but this did not prevent a contribution of about 25 per cent

[1] For England, *cf.* Mr. Gilbert Walker's exceedingly interesting study on the Economics of Road and Rail Competition, *Economic Journal*, June 1933. A vast research program lies in this direction.

to the unemployment of the latter year.[1] Persistently favorable terms of trade—due to the fall in the prices of raw materials, and in keeping with cyclical expectation—must no doubt be set against this result, which they, of course, helped to produce.

The task indicated by this development and by the presence of large areas that were depressed for this and other reasons—reorientation of production—was a specifically English one. It provided the scope for the geographical migration—to the metropolitan area and the South—and for an economic migration of resources into the diversified industries catering for the middle and lower strata of domestic consumption, a process which, since as usual the New did not grow out of the Old, accounts for bright and dark spots alike. Within this picture, however, and barring the influence of subsidized building—partly conditioned in turn by the geographical migration, especially in the second half of the period—the role of the outstanding leaders—electricity, chemistry, and motorcars—is obvious. The motorcar industry, greatly helped by the McKenna duties and road building, did much better than in Germany and substantially contributed to England's new industrial structure in the West Midlands and elsewhere. At first, prospects were most discouraging. During the war the plants of motor (and cycle) concerns had been much expanded, but on antiquated lines. They emerged in a state of inefficiency and immediately lost domestic ground as well as a great part of their export to America. Moreover, engineering firms whose productive apparatus was capable of being adapted to the production of motorcars then crowded into the market, which was, finally, upset by the sales of the War Disposals Department. All this was an element in the crisis of 1921. But a new development started in 1923 with the mass production of cheap cars. From 1921, when but 40,000 private cars and commercial vehicles were produced, output rose steadily, reaching 209,000 units in 1927.[2] The number of insured persons engaged in production and repair of motor vehicles, cycles, and aircraft rose from 192,000 in July 1923 to 233,000 in July 1927, while exports of complete motor vehicles and especially of chassis far surpassed the 1913 numbers. Some of the subsidiary industries and the aviation industry developed still more vigorously. It is worth while mentioning that until 1925–1926—when motor vehicles had increased by 200 per cent over 1919–1920—this went on amidst what, to fit their theories, some observers described as "unrelieved gloom." The nature of the commodity, more than the quantitative importance of direct and indirect expenditure on it and induced by it, disposes of this diagnosis.

[1] See Mr. C. G. Clark's Statistical Studies Relating to the Present Economic Position of Great Britain, *Economic Journal*, September 1931, for a discussion of the various problems concerning exports.

[2] The figures are as published by the Society of Motor Manufacturers and Traders.

The motorcar, aviation, and other expanding industries created new demand for steel. But the iron and steel industry was nevertheless—and in spite of the advantages it retained: good coke, low cost of transportation for some of the world's highest grade ores—ailing all the time and must be listed, along with coal and cotton, among the weak spots of the organism. Expansion during the war, depressed conditions in the shipbuilding industry, loss of foreign markets—directly and indirectly almost three-quarters of the United Kingdom output used to be exported—account for low prices and, in an old industry which follows rather than leads, for the persistence of antiquated methods. But it is also true that there was little of large-scale domestic investment in industrial plant and machinery. Even the well-marked rise of steel consumption in 1927 left it, though nearly 30 per cent above the 1913 figure, distinctly low.[1]

We pass by chemistry—although it affords the best example of entrepreneurial achievement on modern lines England has to show in that period—and everything else, in order to note the fundamental role electricity—again, barring building—played directly and by what it induced. Development in this line, not a mere function of growth but originating and propelling, carried output of the public supply system of Great Britain from 2.5 billion kilowatt-hours to 11 billions at the end of our period, when about 327 million pounds had been invested in the generation, transmission, and distribution of current. This is less than two-thirds of the cost per kilowatt installed in the United States. Technical improvement and larger generating stations (average capacity of generating stations 12,000 kilowatts, as against 7,350 in the United States) account for this as much as does the difference in price level and the lower capital cost of steam-power plant. Average consumption of coal per unit generated fell, much as in this country, from about 3.2 pounds in 1920 to 1.8 in 1930. English industry, which in 1914 had still resisted, was definitively converted, and especially the many small and diversified industries that were newly cropping up were electrified from the first.

But private enterprise supplied impulse and initiative only for the—very considerable—development of the electrotechnical industries, which, in the fashion of nineteenth-century capitalism, grew in a large number of concerns until the great amalgamation into the Associated Electrical Industries Ltd. (1929) put a more modern touch upon it. In the power development, the initiating role belonged to the state, which thus led in the two most important lines of advance that characterized the period. The significance of this lies in the two facts, that entrepreneurial initiative, right from the beginning of the Kondratieff, signally

[1] Home consumption of crude steel in 1913 was 2,131,000 tons quarterly average; in 1927, 2,695,000; in 1928, 2,417,000; in 1929, 2,662,000; a sharp fall thereafter until the recovery from the second quarter of 1933. *Cf.* London and Cambridge Economic Service.

failed in an obvious and purely economic task, and that public agencies, stepping into the breach, attacked it with perfect technological and economic success, although, to be sure, with the entrepreneurial success in America before their eyes. Only 27 per cent of the production of the public supply system was privately owned at the end of our period. The National Grid, recommended in 1925, was made an item of public policy in 1926 (Electricity Supply Act).

Our sketch and the analysis underlying it can easily be verified by a list of the industries that expanded—or, expanded more than others[1]—during the decade. Building, electricity—with constructional and electrical engineering and many subsidiaries of both—and motor vehicles (also aircraft) are there. Furniture follows in the wake of residential construction, as does heating and ventilating apparatus. Rayon, of course, was still an innovating industry. Presence of cement and miscellaneous metals will not surprise us, nor will the presence of public works. But then we find, testifying to the reorientation mentioned above and characteristic of downgrade developments, a great expansion in the miscellaneous trades and services, also in professional services and commodity distribution, in tobacco, food, drink, silk · · · while coal, other engineering, cotton, iron and steel, shipbuilding, and railways supply the complement.

A postwar boom in business and on the stock exchange, studded with strikes, started in 1919 and lasted into the summer of 1920. While it was going strong, banks hardly lived up to the idea some economists have formed about their excessive bent for restriction.[2] Nor, as has been pointed out in a preceding section, was government policy conspicuous for retrenchment. No further comment is required about the crash in 1921, which was for England accentuated by its effects on her foreign trade and which, to repeat, coincides with what according to our count would have been the beginning of a Juglar depression. There was some recovery, in business as well as on the stock exchange, in the fall, but the ground gained was lost in the first half of 1922. Then building activity asserted itself, the Kahn effect (secondary employment) of which presumably helped to mitigate things in 1923. But there were other bright spots, the wool industry being one of them, and the stock exchange was active. The year 1924 displayed all the symptoms of a recovery weighed down by unfavorable environmental conditions. Subsidized building lent

[1] The criterion is employment—no doubt an unreliable guide, the short-comings of which account for the absence, excepting rayon, of the chemical industry, but which may pass muster for the purpose in hand.

[2] The severity of the subsequent breakdown illustrates well the consequences of "liberal" credit policies. It should be particularly noticed that the Bank of England gave an impulse in this direction by repaying Special Deposits. See S. E. Harris, Monetary Problems of the British Empire, 1931, Chap. III.

support, however. Imports increased, prices rose somewhat, unemployment decreased. Even the shipbuilding and cotton situations were relieved. 1925 brought expansion in many of the newer industries, but what might have been the completion of recovery was greatly interfered with by labor difficulties (coal, shipping, wool) and the numerous particular depressions in individual industries, *i.e.*, depressions due to causes peculiar to them.

The clearly abnormal situation of 1926 makes the year difficult to class. A struggle that in any other country might have spelled revolution paralyzed everything. The difficulty extends to 1927, because the repairing of the omissions of 1926 and the fact that 1927 marks the peak of subsidized building would in themselves suffice to explain the brighter colors of that year. However, we do not rely on aggregates and indices only, but also and primarily on what happened in the industrial organism. There many of the new things mentioned above now began to gather momentum. It does not seem unreasonable, therefore, to speak of a new—the fourth—Juglar, since this is not more than our way of expressing those very facts. And it will, perhaps, also seem acceptable to date it for the purpose of counting from 1926, seeing that in the absence of a clearly abnormal event the prosperity phase would presumably, conditions in 1925 having been what they were, have set in earlier. There is no reason, however, why we should insist on this.

2. In Germany, the term Rationalization was used more commonly than it was anywhere else, in order to describe the industrial processes of the postinflation period. It not only expressed what amounted to a conscious national effort sponsored by all classes—though partly from different motives—and encouraged by the federal government,[1] but it also expresses the gist of what we mean by downgrade developments: exploitation to the utmost, partly under duress, of existing possibilities of technological and organizational innovations on lines and principles established before but steadily improved in the process; revision of the whole structure of industry in quest of increased efficiency; systematic struggle with each item of the list of costs—all of which is exemplified to perfection by the postwar history of all branches of German industry. Few things

[1] *More burocratico*, this encouragement found expression in a new governmental board called the Reichskuratorium für Wirtschaftlichkeit, the first achievement of which consisted, characteristically enough, in defining the concept of rationalization. It is, however, more important to note that the spokesmen of the trade unions were by no means hostile. They sometimes maneuvered themselves into somewhat difficult positions by arguing that high wages would make themselves possible by enforcing rationalization and otherwise espousing the cause of technological improvement, while, of course, allegiance was at the same time due to the doctrine that such improvement necessarily injures the interests of labor. Capitalism was condemned for innovating too slowly and too quickly at the same time. But no actual resistance was offered on the latter ground.

were fundamentally new, the most important items being[1] the production on a large scale of synthetic nitrogen (the Leunawerke of the Dye Trust were, however, erected in 1916 as a war measure; the Haber-Bosch invention dates from 1913), the production of aluminum, which in Germany also dated from the war, and, on a commercial scale at least, the radio and the aeroplane. Nevertheless, there was as complete a transformation of the economic organism as there was in England after the Napoleonic wars.

For purposes other than ours it would be necessary to dwell on the great and increasing role played by the industrial activity of the Reich, the states, and the municipalities. As far as the Reich was concerned, it had acquired most of its business property during the war and with no intention beyond providing for war requirements, although both the logic of the situation thus created and the spirit of the times made it easier to expand than to liquidate it. But the states had inherited important interests from their monarchic predecessors and added to them as a matter of principle, while the municipalities simply went further along the path of "municipal socialism." For 1925 total turnover of all public enterprise was estimated by Dr. Marschak at 10 billion marks[2] and total value of all publicly owned property by Professor J. Hirsch—conservatively—at 52 billions, roughly one-fifth of the national total. However, 26 billions are accounted for by the federal railways—which were merely transferred, as a consequence of postwar arrangements, from the states that previously owned them to a corporation owned by the Reich— and 1 billion by the federal post office. The other concerns mainly or wholly owned by the Reich were combined into a holding company (Vereinigte Industrie-Unternehmungen A.G.) and included electrical and electrotechnical, aluminum—the bulk of the German aluminum production was controlled by the Vereinigte Aluminium Werke wholly owned by the Reich—nitrogen, iron- and steelworks, and mining. The Reich also founded a commercial bank of first rank, the Reichskredit-Gesellschaft.[3]

Similarly, the states strengthened their foothold, especially in the fields of electricity and mining, but also in others. The municipalities built and operated additional gas, water, electrical works, street railways, slaughterhouses, and so on, but did not materially go beyond utilities and residential building. The interesting thing about those industrial

[1] We do not list the hydrogenation of coal (or the staple fiber) because it did not, during the twenties, play any significant role, though the technological bases were being laid for the developments of the thirties. This was done within the Dye Trust (Bergius process).

[2] See Wirtschaftsdemokratie, ed. by the Allgemeine Deutsche Gewerkschaftsbund, 3d ed., 1929, Appendix I.

[3] The states and other public bodies did not lag behind. It is interesting to note that total assets of banks controlled by public bodies were, in 1927, 12.7 billion marks as against the 16.1 billions of all other banks.

properties of the Reich and the states is the thoroughly businesslike manner in which they were managed. The public authority was a stockholder, sometimes but not necessarily the only or the controlling one, and interfered but little. The managements enjoyed not much less independence than they would have in any ordinary case, and they behaved as managements ordinarily do—they took pride in technological perfection, good profits, and sizable reserves. The whole arrangement seemed devised in order to put competent businessmen in charge and to keep politics at bay. As a possible solution of the problem of industrial leadership in a socializing state—a problem that loomed large in the discussions of the Commission on Socialization in 1919—it seems to merit attention.

For our purpose, however, we need not take account of this element in the economic life of Germany, except in the case of the production of electrical power which, vigorously developing even during the period of inflation, reached 20.3 billion kilowatt-hours in 1925, 25.1 in 1927, and 30.7 in 1929. Of this total, from 2 to 4 billions were produced in hydroelectric plants. Lignite[1] was used in the production of about one-third of it. About 70 per cent of the output of public supply stations—not of the totals mentioned—was controlled by either the Reich or the states or by municipalities, although the relative share of the latter fell, as compared with prewar times, owing to the improvements in long-distance transmission, which was unfavorable to local sources of moderate size. The federal government's power concerns and participations in power concerns, of which the A.G. für Elektrizitätswirtschaft and the Rheinisch-Westfaelisches Elektrizitätswerk were the most important, were paralleled by the Preussische Elektrizitäts A.G., which combined the power interests of the Prussian state, and by the works owned by Saxony, Bavaria, Baden, and Thuringia. This alone, and apart from the municipal stations, practically amounted to public control of generation and transmission and, of course, foreshadowed progress toward a perfectly coordinated system of interconnecting superpower stations. The work of electrification was, however, not nearly completed even in industry, while agriculture in 1925 consumed only 0.4 billion kilowatt-hours of electrical energy, and railways were, even in 1928, electrified only to 2.4 per cent of trackage. The electrification of the household was hardly begun. As far as the writer is able to make out, total investment was, 1925 to 1929, of the order of magnitude of 2 billion marks.[2]

[1] Brickett production for domestic fueling, the use of lignite as a chemical raw material, and its use for the production of electric current account for its spectacular career. Mechanization of lignite mining, of course, helped. Horsepower installed rose from 55,000 in 1895 to 209,000 in 1907 and 766,000 in 1925; output, which increased even during the war, from 87.2 million metric tons in 1913 to 139.7 in 1925 and 165.6 in 1928.

[2] Assuming that investment per kilowatt installed was about 1,000 marks.

Value of output of the electrotechnical industry made a big stride between 1925, when it was 2.1, and 1927, when it was 2.7 billion marks.[1] These are very hazardous estimates, but they are fully borne out by the official and more reliable figures of value of exports. They rose only by little more than 20 per cent during those years[2]—to 441.2 millions or 26.7 per cent of the total for all countries, which compares with the 417.5 million *marks* and a 25.2 per cent share of the United States. But if that was possible in the face of the existing barriers and the fact that export in this line requires a great deal of capital, it is safe to assume that domestic sales increased much more strongly. Innovation was effectively corraled, however. There were new concerns, but the two that had been leading before the war, Siemens and the General Electric, retained that position.

In 1913 the machinery industry—excluding electrotechnical production and boilers but including locomotives—worked at practically 100 per cent capacity, producing products of a value of 2.7 billion marks (postwar territory) to which export contributed 0.74 billions. In 1925 value of production at prewar prices has been estimated at about 1.9 billions while capacity was for 3.36.[3] Progress during 1925–1929 in quantity and quality of output was very great, value of products at current prices rising by 38 per cent, considerably more than anywhere else, and exports, which rose to about 1 billion marks by 1928, recovering part of their prewar position.[4] While in many respects this was a great entrepreneurial achievement—or rather, the result of a long series of entrepreneurial achievements within a large number of medium-sized firms—which contributed substantially to the economic processes of the time, and while, though of smaller quantitative importance, the industries producing optical, medical, and other instruments, photographic apparatus, and so on—typewriters have been included in machinery—kept well in step, the automobile industry stagnated, notwithstanding prohibition of

[1] Comparison would be greatly to the disadvantage of the United States, where that value rose but moderately during the same time. This may, however, be as much due to the faultiness of estimates as to the fact that in this country the big stride had been made before 1925.

[2] However, 1928 brought a great increase, although Germany's share in the world's trade still remained far below the 50 per cent of 1913.

[3] *Cf.* the Denkschrift über die Maschinenindustrie der Welt, October 1926, prepared for the League's International Economic Conference by the Association of German Producers of Machines (Verein Deutscher Maschinenbau-Anstalten). With due respect for this excellent memorandum, to which the writer is much indebted for a better grasp of the situation of that industry in 1925, exception must be taken to the two methods suggested, p. 17, for arriving at an estimate of capacity. For the estimates actually made it may be urged, however, that the officers of the Association were likely to have a pretty good impression.

[4] United States exports were 1,688 million *marks* in 1928.

imports followed by heavy protection, until about 1927, not only because of obvious postwar difficulties but also because of a temporary inability to modernize itself which is not completely explained by those difficulties. The old firms, which before the war had been among the international leaders, lingered on or died, and only inefficient new ones were added for a time until the belated advent of the small cheap car that was sufficiently economical as regards taxes and gasoline. Domestic progress was also quickened by General Motors acquiring and Ford erecting plants in Germany, prices eventually fell to a level on which the homemade car had a chance to sell—1928, the year of maximum importation, is the first year in which this can be said to have been the case—and the weakest firms dropped out. We therefore note that both investment and sales began to be significant in the second half of our period; but, stated in absolute figures, success remained small. To the 20,000 units which, including trucks and buses, were produced in 1913 corresponded not quite 63,000 in 1925 and about 138,000 in 1928. Motor cycles did better.

Mechanization (*e.g.*, of rolling), concentration of production in bigger units optimally located (*e.g.*, Hamborn), varied progress in electrometallurgy, standardization of products, and improvements in the use of heat and power are the familiar features of typically induced developments in mining and the heavy industries. We will confine ourselves to the organizational aspect. It has been pointed out in Chap. VII that inflation gave a powerful impetus to the merger movement, which already had gone very far during the Kondratieff prosperity. The losses of territory, often cutting through the domains of concerns and upsetting established relations between materials or stages of production, also necessitated reorientation. Many unshapely and unmanageable monsters resulted, which were unable to live as soon as the contours of reality emerged from the fog. The breakdown of the Stinnes concern, the dissolution of the Siemens-Rheinelbe-Union are but conspicuous instances of a process of liquidation which was referred to as the "crisis of concerns"[1] and which, even where it did not lead to failure, put an end to many vertical and horizontal combinations, participations, understandings, and so on. Even such concerns as Krupp, Stumm, and Rombach, had to retrace steps and to take losses. The ordinary and the international cartel and regulation by public authority (*Zwangssyndizierung*) were the remedies resorted to. As an example for the latter kind of rationalization we will mention the potash industry.[2]

In this case it had already started during the war, when the emergence of new works and the sinking of new pits was barred by government

[1] The German word *Konzern* means combination rather than firm.

[2] *Cf.* the report of the Survey on Economic Conditions (Wirtschaftsenquete) on that industry. This report also appeared as a book, 1929.

decree (1916). Three further decrees (1919, 1920, and 1921) put a heavy premium on the closing of mines, which was also facilitated by the merger movement in progress. While the number of works enjoying quota increased from 1921 to 1928, when there were 229 of them, the number of works in operation in the same period decreased to 60 which, greatly improving methods and the quality of the product—also 82 per cent of the product was by 1928 no longer sold in the crude state but processed within the industry, by-products gaining steadily in importance—and reducing cost, increased their output more than threefold in the course of five years.[1] The mergers left six independent concerns in business, of which three produced 80 per cent of the national total. Sales were centralized in the potash syndicate, which in 1925 negotiated an English loan and, according to a complicated schedule, granted rebates to the various (five) classes of domestic buyers but did not fix the prices. These were fixed by a public authority, the federal potash council (Reichskalirat), and subject to the approval of the Ministry of Economic Affairs—needless to ask whether or why they were rigid. In interpreting this case, which is of interest far beyond its relevance to our subject,[2] the reader should, however, bear in mind the fact that capital invested had, before the war, been estimated—very unreliably to be sure—at 1.4 billion marks of prewar purchasing power, while in the Survey of Economic Conditions it was for the end of our period estimated at from 600 to 700 million marks of postwar purchasing power—a loss which no doubt comes under the headings of malinvestment and waste of competition.

Several other cases of more or less the same type—coal[3] and brown-coal mining for instance—could be cited. We will, however, confine ourselves to the case of iron and steel. It could also serve as an example of international regulation which suggested itself owing to the great expansion in capacity coupled with both improvement and more economical use of the product all over the world. Mere quantities, very clearly indicating the upswing that lasted from 1925 to 1928, increased during those years by 15 per cent (iron) and 20 per cent (steel), in Europe alone by respectively 25 and 30 per cent. German production of steel surpassed its prewar level of not quite 12 million tons (1913, postwar

[1] The output of the industry rose to about 10 per cent above prewar level in 1925 and further increased in 1928. Costs of power and heat in terms of lignite fell to less than half. Workmen employed fell, 1923 to 1928, from 40,000 to 19,000. Wage rates rose over 60 per cent from 1924 to 1928, so that wage bill and labor cost per unit of product fell.

[2] The measures taken and the way in which they worked out should in particular be interesting to American students of planning of the NRA type. The problem dealt with by those measures was exactly analogous to the one facing American policy in the time of the NRA.

[3] Coal Act, setting up the Federal Coal Council (Reichskohlenrat) of Apr. 24, 1919.

territory) in 1925, and was over 16 million tons in 1927,[1] though the production of foundries in 1927 was only at the 1913 figure (exactly). The production of rolling mills (semifinished and finished products) was in the same year far above the 1913 figure (by about 60 and 30 per cent respectively[2]). The Berlin Institute's index of iron prices which in 1925 stood at 125 per cent of 1913, fell in 1926 to 112 per cent and then rose, with a setback in 1928, through 1930.

For us the interesting point is that that development occurred in the course of an "organizational rationalization" which was effected exclusively by entrepreneurial effort from within the industry and is suggestive of earlier American examples. The new Vereinigte Stahlwerke, which attained corporate existence in 1926, were a unit of control that aimed at concentration and specialization of production in optimally located plant. From 1926 to 1933 (when in the wake of the crisis another reorientation and reorganization took place) pits were reduced from 48 to 25, ironworks from 140 to 66, steel foundries from 20 to 8, rolling mills from 17 to 10. Very considerable investment was required to achieve this, and almost immediately after their foundation the Stahlwerke incurred a debt of over 500 million marks, a little more than half of which was spent on the erection of new plant and the improvement of existing plant. Their quota in the syndicate was less than 40 per cent, however. Not only such firms as Krupp, Mannesmann, and Hoesch retained their independence, forming other alliances and expanding on their own, but also another group was formed under the leadership of the Rheinelbe-Union, which embarked on an extensive investment program of similar type[3] and soon floated an issue of 800 million marks. The works—those belonging to different combinations as well as independent ones—which produced steel specialties, in 1927 formed an organization called Deutsche Edelstahlwerke. Every one of these steps was accompanied by induced innovation of the technological type, and all of them created an almost completely new industrial organism. That in the subsequent crisis things should have presented a picture which it was as easy as it was superficial to describe in terms of excess capacity and malinvestment will not surprise us.

The quantitatively most important event in the chemical industry, which carried everything before it and solved the problem created by the loss of patents after the war, has been mentioned already. Mark volume of chemical production rose by 33 per cent from 1924 to 1928,

[1] At the same time the number of workmen employed by steelworks was lower by about 16 per cent.

[2] It is for our purposes important to note that there was a sharp setback in 1928.

[3] The above refers to the western district. The heavy industry of Upper Silesia combined independently, and the steelworks of central Germany (Mitteldeutsche Stahlwerke) formed yet another group in which the Vereinigte Stahlwerke participated to 50 per cent.

exports went over 1 billion by 1926—first indications of the unfathomable possibilities of synthetic materials. No other industry displays so clearly an ineluctable necessity of largest scale enterprise—the J. G. Farben (Dye Trust) produces about 100 per cent of total German output of dyes, about 85 per cent of the output of synthetic nitrogen, and about 90 per cent of the output of sulphuric acid, and the Imperial Chemical Industries Ltd. in England, the Établissements Kuhlmann in France, Montecatini in Italy and, to a lesser extent, Du Pont de Nemours in this country hold comparable positions—as well as the necessity, for profits and even for survival, of incessant innovation, as does this premier industry of the future. Into its problems we cannot enter any more than into the problems of the rayon industry, which during our period made its decisive stride, consumption about doubling from 1925 to 1927. This compares with all but stagnation in the cotton, wool, linen, and jute industries. The marked upswing in 1927, which was well sustained afterward, should be mentioned, however. And so should the concentration which went on and reduced, for example, in the cotton industry the 21,600 units that existed in 1907 to 8,000 by 1925. The fact that the limits set to these fragments of a sketch do not allow us to enter into the history of other industries is particularly regrettable, because it makes it impossible to describe those items which would reflect the consumers' prosperity of that time and that large medley of individually small innovations—many of them little more than successful insertions of some new article or brand by means of dashing advertizing campaigns—which in Germany, as elsewhere, contributed so much that is most characteristic of its processes.

Dr. Clausing,[1] applying Professor Spiethoff's model, counts two cycles, the first from a trough in November 1923 to another trough in January 1926, the second from an incipient recovery in February 1926 to a depression (*Niedergang*) from the second half of 1929 to 1932. From our standpoint there is very little to add to or to criticize in this. There is no doubt that 1927 was a year of prosperity also in our sense. As the reader will easily verify by reference to what has been said above, this prosperity links up with industrial innovation which displays all the characteristics we associate with Kondratieff downgrades. We shall see later that time-series evidence would support that: unemployment decreased strongly; price level rose; liquidations, receiverships, and

[1] Gustav Clausing, Die Wirtschaftlichen Wechsellagen von 1919 bis 1932, 1933. C. T. Schmidt, German Business Cycles, 1924–1933, published by the National Bureau of Economic Research, 1934, also observed two cycles, the one from a trough in December 1923 to a trough in March 1926, culminating about March 1925, the other from approximately April 1926 to the late summer of 1932, the crest being difficult to establish (pp. 169 and 170). He notes that after the beginning of 1927 a "growing international similarity is present." (Page 248.)

bankruptcies fell to their postwar minima; foundations of new firms increased and so did corporate earnings. It was clearly the familiar picture of what we are in the habit of calling a Juglar prosperity. Although we have decided (Chap. VII) not to go on counting Juglars in the case of Germany, it is worth while to note that it would not be impossible to do so. Unlike this country, and much more than England, Germany experienced in 1928 what most people will agree to call recession, but the symptoms do not quite answer to our conception of that phase and are in some respects contradictory. The Berlin Institute's index of production and employment fell, while other factors, *e.g.*, money in circulation, cost of living, and wholesale prices rose a little. There was, however, a rally at the end of the year which lasted through the first four months of 1929, when the system, slowly at first, began to slide off into depression. And the case for expecting reaction to the preceding industrial revolution remains strong.

That prosperity did not start with 1927, but was in full swing at the beginning of that year. In terms of industrial innovation and investment as well as of many aggregative indices, such as stock prices, imports of raw materials, orders received, total output, pig-iron production, employment, the second half of 1926 was a time of prosperity in our sense and must be considered as the beginning of the upswing discussed in the preceding paragraph. What went before, however, should not be interpreted as a cycle in the sense of either our own or any other analytical schema. The year 1924 starts—from a crisis and heavy unemployment in the winter 1923–1924—with an upswing which means little more than that business, having fallen from the clouds of inflation, was trying to find its feet. It was cut short in the middle of that year by the effects of taxation and of a pull of the Reichsbank's curb. Prospects of foreign credits—and the first foreign credits actually given—together with sham profits due to low evaluation of assets in terms of the new mark then account for a spurt toward normal volumes, which lasted from about July 1924 to about February 1925. A severe relapse—in the fourth quarter, particularly severe in employment—followed upon this, which was due to a variety of circumstances peculiar to the situation. Hence, it would not do to identify that up and down as a Kitchin.

3. In the United States conformity to expectation during that period is, as stated above, so obvious as to make it almost superfluous to prove it, a fact the value of which is enhanced by the—relatively speaking—small importance of external disturbances in our sense. That the events in the fields of electricity, motorcars, and chemistry do not, in our terminology, constitute fundamentally new but induced and completing developments, which proceeded from bases laid in, roughly, the two prewar decades, needs additional emphasis as little as does the fact that

it was those developments that "carried" the economic processes of the period. We may, however, note the substantive novelty of aviation as a commercial success—1925 may serve as a date—which was perhaps the most important exception. The interesting thing about this industry is that it developed on its own and not, as might have been expected from standpoints other than ours, as an appendage[1] to an older, say the automobile, industry in spite of the similarity its problems bear to those of the latter. Exactly as the telephone industry was not built up by the telegraph industry and has shown no tendency to be dominated by it, and as the rise of the automobile industry owed but little to the carriage and bicycle industries—or, we may add, to the firms that previously produced the Otto motors—or as the moving picture industry, which we might also list among the genuine innovations of the period, did its own pioneering and was not the work, technically, financially, or commercially, of the theater interests, so aviation supplies another instance in verification of the hypothesis of New Firms and New Men (Chap. III) arising independently of the Old Firms and laying themselves alongside of them.[2] The same often holds true of new specialties within each great line of advance, as within the field of electrical industries, partly at least, in the cases of the radio and of the refrigerator.

a. Power production increased from 38.9 billion kilowatt-hours in 1919 to over 97 in 1929,[3] only 1921 marking a relapse of about 8 per cent. Roughly 95 per cent of this was produced by privately financed enterprise and over half of it by the General Electric, Insull, Morgan, Mellon, Byllesby and Doherty groups and a dozen corporations jointly controlled by these. Although the more remote effects of this development on industrial activity in general were much more important factors

[1] This has been stressed so well by Professor M. W. Watkins, The Aviation Industry, *Journal of Political Economy*, February 1931, that we cannot do better than quote from that paper. The rest of the above paragraph is almost bodily taken from pp. 67 and 68.

[2] Professor Watkins' comments on the phenomenon should be quoted: "The explanation seems to be that the managers and directors of older industries, once they have succeeded in establishing as an economic 'going concern' the special branch of industry with which they are primarily identified, lose their adventurous inclinations. They tend to become skeptical of new processes and new products. They lose the 'vision' of industrial pioneers. They become absorbed in the complicated routine of their own affairs and the ever recurring problems of adjustment and adaptation of which no field of business enterprise is free. In these circumstances, it is only the *far-sighted, uneasy, venturesome individuals here and there who are ready to 'cut loose from' a secure position and assured income, and who have the gift of imparting their enthusiasm to other restless individuals (technicians, salesmen, laborers) and to still others, with private capital,* [the present writer's italics] who are willing to take great risks for the chance of great gains—it is only, in a word, adventurers who found new industries. The aviation industry has been no exception . . . "

[3] These figures are as given by the United States Geological Survey and differ considerably from the figures of both the census and the National Electric Light Association.

in the cyclical variations of the period than the immediate effects of the investment in power plant, transmission lines, and distribution, we may yet note that from 1917 to 1927 balance-sheet values of power plants increased from about 3 to about 9.4 billions[1] and that more than 1.5 billions of electrical stock and bonds was issued in the yearly average between 1924 and 1930—the maximum of 2,150 millions occurred in 1927—of which perhaps something less than two-thirds was spent on new construction and extension.[2] Gross earnings of the electric light and power industry reached 2.1 billion dollars by 1929,[3] when household consumption was responsible for 604 millions, industrial and commercial for about 1.2 billion, street lighting and traction for the rest.

Prices, of course, differed widely, not only locally but also as between customers: in 1929 the leather industry, for instance, paid $28 for 1,000 kilowatt-hours and the chemical industry 5.9, 12.7 dollars being the average for that year as given by the census. In the average, however, they fell. The national average price of current used in households is a no less doubtful matter. The semiofficial figures are per kilowatt-hour: 16.2 cents around the turn of the century, about 9 cents for 1912, roughly 7.5 at the beginning of our period, during which it slowly but steadily fell to 6.3 in 1929, or about 3.8 cents in terms of the prewar purchasing power of the wage earners' dollar.[4] This behavior of prices is accounted for, on the one hand, not only by the actual or potential competition of industrial—as distinguished from "public"—stations, but also by "commodity competition"—gas, nonelectrical motors—and the necessity of building up new demand: the electrification of the household and of the farm in particular was to a large extent a question of price. On the other hand, the growth of units of control and the establishment of local

[1] Census data; we might also compare the 1902 figure of investment in that sense—about 0.5 billions—to the 1932 figure—nearly 13 billions, about $384 per kilowatt installed. But not much confidence can be placed in any of those data. Variations in the significance of the monetary unit apart, the figures of different census are not strictly comparable, because they do not include exactly the same things. The above comparison can at best give an idea about orders of magnitude.

[2] About two billions of the total was raised between 1922 and 1932 from customers. The—on the whole—rising standing of the industry drew new types of investors toward its mortgage securities, as life insurance companies and also—compare, for example, the New York State Act of 1927—savings banks. In its then dimensions this was a postwar development. Including the gas industry, total investment by all classes of investors is said to have reached the figure of 18 billions by 1932, including what may be termed the distress issues of that year.

[3] The development is interesting: 1902, 85.7 millions; 1907, 175.6; 1912, 302; 1917, 521; 1922, 1,072; 1929, 2,107. *Cf. Wall Street Journal*, June 28, 1930.

[4] According to the cost-of-living index of the National Industrial Conference Board. The Department of Labor's prices of current are somewhat higher, but their tendency is the same.

and sectional monopolies facilitated discrimination and went far toward eliminating price competition between those units, while their struggles were transferred to the financial sphere. That explains why the weighted average of prices did not, *within our period*, fall correspondingly to the increase in efficiency of production, and this again was why most operating companies were in a position to improve their financial status considerably[1] and to weather the subsequent storm comparatively well. The competing-down process and its contribution to the general picture of the period, but especially to the subsequent Great Depression, took under the circumstances a form which was in many respects peculiar. It asserted itself mainly through shifts in industrial location—electrical development materially helping, for instance, in the industrialization of the South—and much less directly as, for instance, in the effect on coal. But no difficulty arises in elaborating this aspect.

Technological advance was much on the same lines as in Europe. Water-power development played, of course, a great role: from 1924 to 1928 it progressed at a greater rate than the capacity of steam plants, reaching an output of 29 billion kilowatt-hours by 1930 though at the end of the period steam began to gain ground relatively. The use of fuel oil and gas was an American peculiarity.[2] Otherwise we observe the general tendencies toward larger capacity of stations—the number of plants fell by one-third between 1922 and 1929—and superpower zones. Since in extending electrical enterprise to foreign countries capital counts for almost everything, the success of American groups, especially in South America, is easy to understand (American and Foreign Power Co.). About one billion went to South America, Europe, Asia, and into what presently turned out to be so many traps.

Considering the technological nature of much that was done, mergers, partly also aiming at the control of gas concerns, were the unavoidable concomitant of this development. The financial instrument of the holding company lying ready at hand therefore experienced a new vogue of unprecedented dimensions. Power finance definitively passed out of the hands of the manufacturing industry and coordination resulted from a struggle within the power-producing sphere, in which the groups mentioned above emerged or conquered. Since this struggle involved com-

[1] The general question of raising funds for consolidation and investment—in part—by "taxing" consumers *vs.* borrowing is conveniently discussed by means of the model of a socialist state faced by the analogous problem. It cannot be disposed of by an argument on the lines of Marshall's concept of consumers' rent because this covers at best the stationary case. All that matters for us, however, is the fact of that price stability and its possible effects on the cyclical process under the three headings of "rigidity," profits, and financial status.

[2] The use of natural gas, itself a major feature of the period, increased in the decade after 1919 from 21.4 billion cubic feet to 77.

petitive bidding for strategic positions, such geographical and commercial rationalization as was achieved was accompanied by the growth of a huge structure of debt—closed mortgages, open-end mortgages, insured debentures—and share capital, which was out of proportion with the effects of that rationalization, and not only provided food for purely financial maneuvers and speculative excesses of a type suggestive of the railroad age, but also jeopardized the banking system, since power securities loomed large in its collateral and since many leading banks, among them the National City, the Chase National, the Bankers' Trust, the Guaranty Trust, associated their fortunes directly with power enterprise and in fact functioned in some cases as the agents of ultimate centralization. Without going further into this well-known matter, we will note that the great boom in power finance—and real investment—belongs to the second half of our decade. It was a feature of the fourth Juglar and clearly basic to its prosperity phase. In fact, building construction, power development—together with developments in other branches of the utility field which we cannot stay to discuss but which also fit into our general idea of the processes of a Kondratieff downgrade[1]—would in themselves suffice to account for the behavior of aggregative time series during the period.

The major instances of the propelling and dislocating effects of power developments are obvious, and description of the sum total of all the minor ones is impossible within this sketch. But it should be emphasized in view of popular dirges about lack of investment opportunity that the work of electrification—as much of it even as is technologically and commercially possible at the moment or in immediate prospect—is not nearly completed. There is enough investment opportunity from this source alone for many a cycle to come. Even industry is as yet but imperfectly electrified—perhaps to something like 75 per cent—and so are households, while but a beginning has been made in the electrification of farms and of transportation. Only the telephone and electric lighting can reasonably be said to have exhausted, *ex visu* of present technology, the bulk of their possibilities,[2] although the automatic tele-

[1] Utility developments form part of the picture which we expect a Kondratieff downgrade to reveal, because they are to a large extent a function of real income and its rate of change. Accordingly, we find expansion—induced expansion—in the utility field in the two last decades of the first Kondratieff as well as in the downgrade of the second (eighties and early nineties). We find the same phenomenon in the present instance.

[2] A criterion of whether or not an industry is past its first spurt is in some cases afforded by the presence or absence of setbacks in its expansion. As far as the writer is able to make out, the number of telephones installed increased without any break, depression or no depression, from 1876, when there was no commercial installation, to 1930 inclusive, after which year there was a fall. Recovery set in in 1934, but the precrisis figure was not nearly attained in 1935. However, within our period the number of telephones installed

phone—installation was zero in 1892 and only 1.7 per cent of the total of telephones installed in 1919, but nearly 32 per cent in 1930—which must be listed among the innovations of the period under discussion, affords a good illustration, if one be needed, for the fact that even perfect saturation of existing demand need not call a halt of "progress."

Production of electrical equipment had, ever since 1915, increased at a greater rate than production of power and continued to do so until 1929. Its value was about 1 billion dollars in 1919 and nearly 2.5 billions in 1929.[1] Examples of new industries—and the "diversifying" effect of power production—abound. We will merely note that the spectacular expansion of the radio and the refrigerator industries dates from 1926. The quarter of a million socket radios then in use increased to over 7 millions, the 315,000 refrigerators to 1,680,000 in 1929.[2] Though typical instances of downgrade developments, these were practically new industries with histories of their own. But they were not so independent of the older concerns in the industry of electric manufacture as, say, aviation is of the automobile industry. Generally speaking, these older concerns maintained their position well, and proved in this as in other countries successful shells of incessant innovation, especially in the heavy-current field (General Electric, Westinghouse). Dollar volume of output in electric manufacturing increased about sevenfold between 1914 and 1929, and about 26 times from 1899, the census year nearest to the beginning of the Kondratieff, to 1929.[3]

b. The automobile industry led in every upswing and out of every downswing throughout the period, in fact beyond it, and continued in the Kondratieff recession to qualify as well for the role of standard example for the processes embodied in our model as it had done in the upswing. Employment in motor-vehicle factories, not including production of parts, tires, and bodies, increased from about 253,000 in 1922 to 427,500 in 1929, the corresponding wage bill from about 396 to about 775.5 million dollars. Passenger-car registration as of Dec. 31 increased without any break from the beginning of the series (1895:4)

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rose from about 12.7 millions in 1919 to over 20 millions in 1929. This increase was sufficient to raise the number of telephone operators by about 30 per cent, in spite of the labor-saving effects of the automatic telephone and some "taylorizing."

[1] Census figures.

[2] Figures of the Edison Institute. The number of socket radios continued to increase throughout the depression to nearly 20 millions in 1935, an example for those initial spurts which are impervious to depressions. As the reader will remember, such behavior is, if anything, normal from the standpoint of our analysis, though in practice it is not the general rule. Similarly, the number of refrigerators in occupied homes kept on increasing without a break and reached the figure of 7.25 millions in 1935.

[3] The number of workmen employed rose from 42,000 to 329,000 between the census of 1899 and 1929.

to 1929 (23,121,589), though of course at a decreasing percentage rate, depressions affecting the latter only.[1] Even in the world crisis and in the year of minimum registration (1933) the total automobile retail and service business, including accessories, filling stations, garages, and also retail sales by wholesalers, figures out at $4,831,800,000.[2] Over 1.1 million persons were engaged in distribution and servicing, among them 756,000 employees (part-time included), receiving wages and salaries amounting to 801 millions. Quantitative expansion and qualitative improvement, falling costs, prices, and rates of profit are obviously the expected as well as the actual characteristics of this industry's history during our decade. However, since there is no satisfactory way of measuring qualitative improvement, and since there was an almost uninterrupted shift from larger, heavier, and dearer to smaller, lighter, and cheaper cars—in 1903, for instance, 4.2 per cent of automobiles produced cost $675 and less, in 1924 nearly 60 per cent[3]—even quantitative expansion becomes elusive, while indices of quoted prices, which should moreover be corrected for variations in the allowances made for old cars "traded in" and for other forms of rebates, cannot indicate more than a tendency which, of course, they understate.[4] From 1916 on, profits of individual firms not only fell but also became more nearly equal.

[1] Tax-exempt official cars are excluded. Registration of trucks increased through 1930. Possibly a "break in trend" in registration of passenger cars may be said to have occurred about 1929, after which it may be expected to move over time roughly as population in the age groups between 25 and 60.

[2] United States Census Bureau, "Census of American Business for 1933." It is of some interest to note that in the same year state highway expenditure was about 666 million dollars (United States Bureau of Public Roads), total rural highway expenditure about 1.5 billions.

[3] See Epstein, *op. cit.*, p. 336. Needless to say that does not measure that shift with any exactness.

[4] On this point see Professor Epstein, *op. cit.*, p. 47. He tries to convey an idea by giving instances of the selling prices of "fairly comparable models," for instance, of a Packard which sold at $7,000 (without equipment) in 1904 and at $2,585 (equipped) in 1924. The Bureau of Labor Statistics wholesale index of automobile prices falls sharply to 1916, then rises to a peak in 1920, from which it again sharply falls to 1926—eight points below the minimum of 1916. Then it rises to 1929, partly at least owing to the reconstruction of the Ford works. Another index has been constructed by Mr. J. W. Scoville, Behavior of the Automobile Industry in Depression, (Econometric Society address, December 1935; published separately), which also displays a trough in 1916. The subsequent peak, however, comes in 1918. From it this index falls precipitously to 1923, to rise to and reach a peak in 1927, after which there is decline, much stronger than in the case of the Bureau of Labor Statistics index, to 1933. Neither index, of course, overcomes the fundamental difficulties, which also vitiate cost figures. Attempts have been made to arrive at a more telling picture by computing prices of cars, or of automotive products in general, per pound. The Automobile Manufacturers' Association constructed an index based on the average list prices of the lowest priced five-passenger closed model of each make, weighted by its relative share in new-car registration. This index overstates the

The industry did not simply expand in function of the increase in real income but helped to bring it about. The former nexus, however, steadily gained in importance at the expense of the latter, as had been the case with cotton after the Napoleonic wars and with railroads from the eighties on. Innovations, increasing in number while individually decreasing in importance, are typically of the downgrade type. From 1912 on, designs became more stable. Considerable progress in the standardization of parts and in the rationalization of assembling reduced costs as did progress in subsidiary industries—tires, nitrocellulose lacquers and fast-drying solvents, and so on. Equally important or more so were the changes in organization and financing that were in part induced by the struggle for survival within the industry, in which incessant innovating and expanding into the low-price market was a matter of life and death. Competing-down went on at a rapid rate. The rise in price level after 1916 helped to keep failures and exits at a low and decreasing figure, and even the setback of 1918, when both production and wholesale value fell absolutely for the first time, cost few lives. But after 1921, when production and wholesale value again fell absolutely, exits—not necessarily failures—increased sharply *in the midst of spectacular expansion* of the industry as a whole, reaching 21 per cent in 1924. In 1923 and 1924 no less than 29 firms went out of business, 17 of them war and postwar foundations. Of the 101 plants—makers, not concerns—whose annual production of passenger cars was 5,000 or less in 1920 only 11 survived in 1930; of the 23 whose annual production was from 5,000 to 25,000, also 11; while we still find all of the 10 which produced over 25,000 in 1920.[1] By 1918, 70 per cent of all automobiles produced in this country and Canada came from the three largest producers, by 1921 80 per cent, and by 1935 nearly 90 per cent.

Considering that the car of the masses[2] became a reality, while the industry, which had always been monopolistically competitive, developed

case—it falls by 40 per cent from 1925 to 1932, see chart on p. 6 of Mr. Sloane's message to the General Motors shareholders of Dec. 31, 1937—but is, in the particular circumstances, perhaps somewhat less objectionable than it would be in general. For the behavior or profits, see Epstein, *op. cit.*, pp. 243, 256, 264. There it will be seen that the "bonanza period" lasted well into the Kondratieff recession (1916, according to Professor Epstein), which conforms to expectation. It is, however, interesting to observe how the leading firm fared. The ratio of profits to net worth in the Ford concern fell from its 1907 peak with well-marked cyclical fluctuations heading toward zero until the plant underwent its complete reconstruction—which amounted to a second, though induced, innovation—in 1927. Number of new companies founded followed those fluctuations with an average lag of between one and two years.

[1] J. W. Scoville, *op. cit.*, p. 24.

[2] It should be mentioned that the "automobilization" of the farm went further than did its electrification. At the end of our period about 60 per cent of all farms were equipped with motor vehicles, and about one-quarter of all trucks were in farm use.

a typically oligopolistic situation, we cannot help being painfully aware once more of the somewhat less than realistic character of the general conclusions arrived at by the leading theorists of monopolistic competition.[1] In fact, it should be obvious that the behavior of the motorcar industry during our decade could be described much more convincingly in terms of perfect competition working under the conditions of a new industry in the course of being absorbed by or inserted into the economic system. In the course of this development, ever since about 1916, methods of financing changed significantly. "Outside capital" began to play a greater role. We need, however, only mention the direct contact established by General Motors with the open market and its policy —followed by the other concerns—of financing the consumer. Nevertheless, owned capital accumulated from profits and retailers' and furnishers' credit remained the industry's most important sources of means, and this accounts for much which strikes the observer as particularly "sound" about it. Net tangible assets of motor-vehicle manufacturing plants reached their maximum of about 2.1 billion dollars in 1926 and then steadily fell, though up to the crisis but slowly. However unreliable any inference from this may be, it seems clear that, barring the Ford plant, the great wave of investment belongs to the third and not to the fourth Juglar.

In order to prove with quantitative precision how much of the processes of the period and of the behavior of aggregates can be explained by the motorcar developments alone, it would be necessary to go fully into what they meant for the steel, copper, and equipment industries and so on.[2] We will, however, confine ourselves to one remark on the petroleum and another on the rubber industry. Innovations that have already been mentioned (Chap. VII: flooding, cracking, hydrogenation, extension of new uses such as fueling of locomotives and ships, by-products) and the discovery and development of new oil fields account for the fall in gasoline prices (excluding tax) from $0.2411 per gallon in 1919 to $0.1557 in 1929 and—gasoline consumption did not fall until

[1] Some exponents of the practical implications of those conclusions—restriction of output at rising prices and falling profits, uneconomically undersized plants, and so on—are, realizing that there is danger that those conclusions might look to us like caricatures, in the habit of listing the motorcar industry as an exception. But it is only the outstanding example of a very large class. The tire industry, to be mentioned presently, is another. Compare what has been said on these points in Chaps. II and X.

[2] Even the railroads, which on balance, of course, suffered, did not go without a share. Transport of vehicles themselves, of steel, gasoline, and lubricating oil contributed a non-negligible amount to their revenue. This amount becomes even important if we include road-building material, although the Automobile Manufacturers' Association's estimate of over 265 millions for 1934 seems somewhat optimistic. Net premia of all types of automobile insurance amounted to nearly 411 millions in the same year, according to the Insurance Year Book Service.

1932—$0.1178 in 1931,[1] which shows that the petroleum industry was not passively drawn along by the growth of demand. Yet it comes sufficiently near to this pattern to qualify as an instance. This is particularly evident at the beginning of the period. In 1920 prices of oil and gasoline rose considerably (peak of the period), so much so as to throw them out of line with those of competing fuels and as to restrict the use of fuel oil by railroads—the Great Northern, for instance, converted 70 locomotives into coal burners. This followed upon the doubling of automobile production in 1920 as compared with 1918, with which the gasoline production was then unable to keep pace. An oil boom started accordingly, which almost coincided with deep depression in other lines. Issues of oil securities were at a peak early in 1920 and again toward the end of the year and at the beginning of 1921. It is worth while to mention that the only cities in the country which experienced greater building activity in November 1920 than in November 1919 were Los Angeles, Baltimore, and New Orleans, and that the Californian cities all showed large gains in their clearing figures while these declined in the rest of the country. At the beginning of 1921 there was a large oil merger (Barnsdall Corporation). Further developments followed and crude prices reacted promptly, Midwestern prices, for instance, falling to $1 a barrel in the summer of 1921, as compared with $3 in January. We need not, however, follow the history of this, in many respects, peculiar case.[2]

The rubber industry was, of course, also "drawn along." But its own innovations were much more in evidence. As we have seen elsewhere, beginnings date far back (Goodyear vulcanization to 1839, for instance) or at any rate to the Kondratieff prosperity (reclaiming, *e.g.*, 1899, acceleration of the vulcanizing process 1906; but commercial success of synthetic rubber came after our period), the use of various pigments in order to increase the durability of rubber compounds (1916) being the only "inventive" innovation of the twenties. It was again the "spreading" by means of discovering new and developing old industrial uses for rubber (flooring, rubber cushions, rubber linings, mountings, bumpers, and so on) which was a feature of the period under discussion. In the field of the most important article the great new thing—though also invented long ago (R. W. Thompson, patented 1845)—was, of course, the pneumatic tire (1916), which followed upon the success of

[1] Figures of the American Petroleum Industries Committee; tank wagon; 50 selected cities.

[2] We may note that in 1927 the industry employed 1.25 million people and that equipment facilities, including pipe lines, were valued at about 11 billions. There were then 330 refineries with a capacity of 3 million barrels crude a day, while the 318,600 wells produced 2.4 millions.

the cord and may be said to have imparted immediately a significant impulse to long-distance trucking,[1] although at as late a date as July 1, 1920, the *India Rubber World* (p. 633) professed itself unable to believe that the solid tire, which had greatly improved in reaction to the intrusion of the new competitor, would be crowded out. At the same time the commercial opportunity for low-pressure tires for passenger cars manifested itself in the habit of many motorists to underinflate their tires for the sake of comfort.[2] By 1923, 21 companies, among them practically all the leaders of the trade, were making such tires, experimentally or commercially, and several automobile manufacturers had adopted them as part of the regular equipment of their cars, while others listed them as optional. A "revolution" in tire making, the more important because it involved considerable new investment, announced itself. There was still resistance to overcome. But improvement and standardization—as to rim requirements—carried the innovation suddenly to definitive success about 1925, after one of the tire companies had taken the bold step—in the midst of doubts about practicability and the probable reaction of the public—to bring out balloon tires for all standard rims and thus to make a bid for immediate replacement of practically all tires in use. The aspect of the market changed within a few months, and the "host" followed the innovator promptly. There is no need of going into the illustrative virtues of the case or the quantitative importance of it for the fourth Juglar.[3] With quick changes in production functions, the competing-down process asserted itself strongly. We shall interpret in this sense the symptoms of overinvestment and overproduction,[4] observable already in 1923 and again after 1926, and expect a contribution to the picture of the subsequent crisis from this industry.

[1] Registration of trucks increased from 136,000 in 1915 to over 2 millions in 1924, much more than passenger-car registration. This would hardly have been possible without the success of the pneumatic tire, first displayed by the Goodyear Wingfoot Express.

[2] This instance shows the relation between "wants" and enterprise (in our sense) very nicely. Consumers by thus clearly indicating their wishes displayed an altogether unusual amount of initiative, which greatly facilitated the entrepreneurial act. Yet they did not, off their own bat, "demand" balloons and that practice of underinflating might have gone on indefinitely without giving rise to what almost amounted to a new industry. This development was, no doubt, conditioned, but it was as little brought about by consumers' behavior as was the development from fabrics to cords, supertwists, and rayon cords.

[3] Employment in the industry expanded considerably at wage rates which head the list of basic industries and were above the average of all manufacturing industries. It has been stated that in 1908 a workman in tire manufacture received on the average 40 cents per hour and could have bought for $35 a tire which was good for about 2,000 miles, while in 1936 he received 88 cents and was able to buy a tire which cost $8 and gave 20,000 miles of service, so that an hour's labor gave him about 95 times as much tire service in 1936 as in 1908.

[4] E. G. Nourse and Associates, America's Capacity to Produce, 1934, pp. 236 and 237, estimate average utilization of capacity for 1925–1929 at 85.3. This is high under the

c. The heavy chemical industry had, as we have seen, developed well before the war, but enterprise in the organic branch was entirely conditioned by the seizure of German patents and later on by protection.[1] Prices of chemicals, which according to the B. L. S. index (1926 = 100) were at 89.4 in 1913 and which had, owing to the practical cessation of German imports, soared to 197 by 1916, testified to the vigor of entrepreneurial response to those new conditions by falling to 97.2 in 1922.[2] Both the coal-tar group in all its stages, particularly in the production of dyes, and the aliphatic group scored a series of successes that extended over the whole of our period and throughout the subsequent depression and amounted to the creation of new industries. Investment, employment, wage bill, profits, and dollar volume of sales—about 2¼ billions towards the end of our decade—increased to a peak in 1929 for the chemical industry as a whole. Sales in the non-coal-tar group continued to increase without break afterward. Medicinals, solvents, perfumes, antifreezes, carbon tetrachloride, acetic anhydride, camphor, resins, nitrates (synthetic iodine and synthetic rubber came early in the thirties) may serve as examples. Analysis of the individual cases would show little more than so many instances of the way in which innovation works.

Three points only call for additional comment. First, for the same reasons as elsewhere concentration of control and research and coordination of specialized large-scale plants were in evidence in this industry. The Dupont concern, like the J. G. Farben, expanded far beyond the chemical field.[3] The other giant, the Allied Chemical and Dye Corporation, was the result of a merger in 1920 of five big concerns—three of which were in the "heavy" field—which to a large extent complemented each other. Second, new branches of industry emerged around what

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circumstances and reflects the increase in production from about 2 million tires in 1918 to nearly 8 million in 1929. But it is perfectly compatible with considerable underutilization and overproduction (the latter in the sense that "old" firms often failed to cover *their* costs) in spots.

[1] Developments illustrate, however, the rationale of the distinction between conditioning innovation and innovation itself. Whoever feels inclined to doubt it is invited to try to deduce these developments uniquely and *ceteris paribus* from those two events.

[2] Then they rose to hover around 100 (there was an upward movement in 1925) through 1928, when they embarked *in consequence of quantitative expansion at falling costs* on another downward course. It is important to note, first, that this again affords an illustration of popular statements about rigidity and, second, how much more obvious is the influence of individual prices, falling under the impulse of innovation, on the price level than any influence of autonomous monetary factors acting through the latter on individual prices. There should be no uncertainty about the diagnosis and the significance of such facts that say indigo fell from $2 a pound in 1916 to 14 cents in 1932, or barbital and veronal to about one-seventh and aspirin to about one-eighth of its prewar price.

[3] The interest taken in General Motors is one example of this method of acquiring and buttressing markets.

may be called the production of chemical fundamentals. A host of small and medium-sized firms took up the production of a truly unsurveyable variety of drugs, cosmetic articles, and so on. The results, as distinguished from the formal properties, of monopolistically competitive situations are much more in evidence in this group and within its army of retailers and advertisers than among the few big producers of the basic stuffs. For us it is important to note the quantitative importance of this trade and to account for its spectacular expansion: the unrivaled opportunity which it exploited was one of the consequences of the increase in the real income of the masses which left even the lowest income groups with a surplus that was not a priori allocated to specific purposes but ready to go wherever advertisements beckoned. The phenomenon thus fits well into our ideas about downgrade developments. Third, the chemical industry displays the (secondary) competing-down process within the innovating line much *less* than, say, the automobile industry; but it displays the (primary) competition, *i.e.*, the competition with other commodities or older methods of producing the same commodities much *more* than almost any branch of economic activity. In some cases its innovations act through other spheres of production, agriculture for instance. In others they act directly and then with a promptness to the consequences of which the social fabric of capitalism may well prove unequal some day. Chemistry provides not only acceptable and cheap substitutes for things that are the basis of much employment and investment, but quite often exactly the very same things—frequently in a better, especially more uniform and more reliable quality, as for instance in the case of varnishes and dyes—which had been produced by nonchemical methods before. It does so almost always at a cost which eventually, though not as a rule immediately, falls far below the level attainable by the latter. In such cases large sectors of the economic organism may have to go out of operation at very short notice. If the consequences have so far not made themselves more strongly felt in our three countries, this is because they mostly impinged on others, on Chile for instance or India—or in the case of madder, on the countries from Southern France to Asia Minor—or Sicily (citric acid, 1927) or *pro futuro* on the rubber-producing countries. The United States, England, and Germany were, during the period under survey, not much affected in this respect, and whatever effect there was was rather favorable. But more serious dislocations may arise from such developments some of which are obviously imminent. The term revolution acquires in this connection a particularly ominous meaning. Depressive influences may emanate from this line of advance by comparison with which anything that can be effected by action on monetary aggregates, central bank action included, is of negligible importance.

The rayon industry, of course, owed much to the tariff, and its great concerns owed much to their control of patents. But in all other respects the case is strikingly analogous to that of the automobile industry. We have a sharp competitive struggle at the beginning of the period, partly due to the numerous short-lived foundations after the war, from which, as has been stated elsewhere, emerged three concerns which accounted for about 90 per cent of the production of the country. In this oligopolistic setup the great expansion of consumption took place[1] which was but little affected by the world crisis. Wholesale prices (150 denier, A grade, New York) fell from the 1918 peak to about the prewar level (1914, $1.96 per pound) in 1925, and were at $1.25 by 1929.[2] Profits per pound of product steadily declined, although in the case of the American Viscose, which remained the leading producer throughout, they were still 58 cents in 1928.[3] Other textiles, though not without some propelling influences—higher cotton consumption per spindle, production of cord, artificial leather, broadcloth shirting, fancy woolens and so on—behaved like the old industries they were. Quantitative expansion and qualitative improvement were considerable, and there was much rationalization in details. This does not alter the fundamental traits of the picture, which are reflected in the behavior of prices.[4] Continuing locational shifts caused as much sectional depression as sectional prosperity. The Department of Labor's combined index of employment kept steady throughout the decade, but nevertheless marks strongly the upswing that set in during the second half of 1925.

d. As far as changes in production functions go, the iron and steel industry should really be dealt with—as should metallurgy in general—in connection with chemistry and electricity. It suffices to mention the career of light alloys, the first stage of which was run during our decade, especially from 1925. There were also technological and organizational changes of other types, such as continuous rolling or the crowding out of the merchant furnace, and of course many improvements of the

[1] Deliveries—shipments of American firms plus imports minus exports—as computed by the Textile Economics Bureau and published in the *Rayon Organon* and elsewhere, increased nearly threefold from 1923 to 1927 and again by about 50 per cent to 1931. They do not include acetate rayon, which gained ground steadily and was in 1925 little more than 3 per cent of the total production, but 7 per cent by 1929 (nearly 22 per cent in 1935).

[2] What has so far been the minimum, 50 cents, was reached in April 1933. Here again the contribution to the price level of the crisis period is more significant than the contribution of that level.

[3] The oligopolistic pattern developed into a monopoloid one through the merger in 1925 (American Rayon Production Corporation).

[4] The B. L. S. group index for cotton goods (1926 = 100) was 56 in 1914, 147.5 in 1919, and 190.7 in 1920. Then it fell abruptly, but was still 98.8 in 1929. Only in 1932 it fell below the 1914 figure. The group index for woolens and worsteds behaved similarly.

rationalization kind in individual lines or concerns. Increasing use of scrap in the steelmaking as well as in the copper, aluminum, and other industries deserves particular emphasis.[1] Speaking broadly, however, the steel industry suffered in depression—especially in 1920 and 1921—and prospered in booms—the peaks in pig-iron output occur in 1923, 1925, and 1929—in consequence of the general business situations, rather than in consequence of its own enterprise. The behavior of its prices[2] accords with this impression. Steel consumption increased strongly, however, in spite of all the steel-saving rationalizations, which were more than offset by the conquest of new uses—steel increasingly became a consumers' good—and general expansion. Per head of population it was, at the end of our period, seven times as great as it had been in 1900.

Nothing fundamentally new happened in the aluminum and copper industries. We have, however, already observed in an earlier place that the former displayed great initiative in discovering and conquering new ground. Its quantitative expansion—domestic primary production more than doubled between 1915 and 1929, while domestic consumption increased more than threefold, secondary production accounting for the greater part of the difference—was one of the major industrial features of the period, another good instance of a downgrade development. Price behavior was in accordance with this and characteristically different from that of finished steel. The absence, comparatively speaking, of fluctuations around the fundamental contour affords an interesting example of what "control" by one firm really means under conditions of rapid growth and of commodity competition. The domestic price of new aluminum ingot 99 per cent pure reached its war maximum by 1916 and its prewar level or, corrected by the B.L.S. index of wholesale prices, a figure nearly 30 per cent below it, by 1922. It then slowly rose to 1925, afterward fell somewhat, and was maintained at 23.3 cents

[1] This material-saving practice, a typical downgrade development and responsible for the increasing divergence between pig-iron and steel outputs, of course exerts a depressing influence on the production of a number of important raw materials also outside the metal field, and constitutes in each case a distinct innovation as well as a distinct industrial problem. The prices of scrap are more sensitive to the course of cyclical phases than any other commodity prices and, as has been pointed out by the Berlin Institute (*e.g.*, in 1926), the relation between scrap- and pig-iron prices is a good index, even forecaster, of business situations.

[2] Steel prices never came down to the 1914 average and kept substantially above it even during the crisis. Their behavior is interesting because of the differences in the price policy of different concerns, which make it difficult to speak of one price at a time. The lead of the United States Steel Corporation was not consistently followed by the independents. But neither did the latter do what one might expect from younger and more vital concerns, *viz.*, take an initiative in reducing prices. On several occasions they were more eager to advance and more reluctant to reduce them than the United States Steel Corporation was.

through 1934.[1] Thus it failed to fall in 1930, when it would have done so under competitive conditions. But the profits made are not in themselves sufficient to prove that in the long run prices were, given the protection, substantially above—they even may have been below—that level at which they would have moved had competitive conditions prevailed from the outset, provided we include in the latter the degree of productive efficiency compatible with the competitive scale of individual firms. Nor does it follow that, if all or most industries had been organized in the same manner, they would have still found it to their interest to adopt the same policy of price stability.[2]

The war for obvious reasons brought a large expansion in the consumption of copper, to which the new mines and mining methods (see Chap. VII) were, however, fully equal, so much so that already in 1917 efforts were made to fix prices. They were followed by others throughout the twenties, which in fact succeeded in keeping price fairly stable at about prewar level (12 to 15 cents) from 1921 to 1928. At the same time costs were being incessantly reduced by further development of large-scale mining methods and by new processes of smelting and refining as well as by the discovery of better deposits. There were also important horizontal combinations—among mining companies, smelters and refiners, and copper- and brass-producing concerns—and vertical ones. Thus an untenable situation developed—indicated by the fact that production kept persistently above consumption, stocks being well above prewar level throughout—under what for a decade seemed a prosperous surface: one of the weak spots that were to contribute their share to the processes of the world crisis. Secondary copper—in 1929, production of secondary copper from scrap was 40 per cent of smelter's production of new copper from domestic ore—and the output of low-cost mines in Canada, Katanga, and Northern Rhodesia did the rest. The formation of an international export cartel under the Webb-Pomerene Act (Copper Exporters, Inc., October 1926, which "controlled" 90 per cent of the world's production) only deferred the catastrophe.

We have here an extremely interesting case of an otherwise perfectly unfettered process of capitalist innovation, which was interfered with only by capitalist interests themselves and by these again only through an attempt to put out of operation a single element of the mechanism,

[1] Data are from the *Engineering and Mining Journal*. The American Metal Market gives for the same year an average of 21.6.

[2] In that case reduction by agreement of all those prices would have been practicable and might have suggested itself because, with respect to all of them, demand would not have been as inelastic as it was with respect to each of them taken singly. In the case of public price fixing, on the other hand, that stability might have become an end in itself, as it did in most cases of price regulation by public authority.

viz., the effect of "progress" on price. It is worth while to consider what the course of events might have been without such an attempt. Prices would certainly have fallen and it may well be that especially in the short run this would not have increased consumption appreciably. But this is not the point. Mines and refineries which actually were kept alive would have been eliminated in any case, though of course more of them if demand was really inelastic in the relevant range than if it was not. And this would have first eliminated waste—for it is social waste to work a mine or refinery which can be worked only at an "artificial price"—and second helped to tone down the prosperities of the twenties, to spread the work of readjustment and *pro tanto* to mitigate the subsequent crisis. If all this be impossible or more than the system can stand, public regulation or ownership is, under such conditions—the reader should carefully analyze in what they differ from those of the aluminum case—in fact the only alternative to violent breakdowns, though not necessarily a remedy for this type of economic waste.

e. While it is believed that the above exposition brings out the salient features of the industrial processes of the decade under discussion, establishes what we have set out to establish, and suffices for our purposes—particularly for the purpose of interpreting the business situations of the period and the behavior of aggregative time series—it must once more be emphasized how very incomplete it is. It even leaves out some major elements—natural-gas-pipe lines (1927) have, for instance, not even been mentioned—and practically all those minor ones[1] the sum total of which is particularly important in the downgrade of a Kondratieff. Knowledge of the full extent of the revolution which that period witnessed both in the methods of production and commerce and in the structure of the budgets of households, and an adequate analysis, in the light of it, both of the period itself and of its aftermath, would presuppose very many case studies beyond those we at present have.[2] Nevertheless, the main features stand out unmistakably and can be further illustrated by a few facts from the Abstract of the Census of 1930.[3] This census

[1] A major movement, which however resolves itself into an almost infinite number of small ones, is what may be called Taylorization. Its spread during our period is a typical consequence of the struggle for survival amidst the readjustments of downgrades. The pressure of this country's wage level adding momentum, this type of rationalization of every job was in many cases more effective in reducing costs per unit of product than fundamental innovations could have been—and in all cases highly significant from our standpoint. It is a special case of a class of which the efforts to utilize scrap and waste are another.

[2] The most important achievement in that field is Mr. H. Jerome's Mechanization in Industry, herewith recommended once more to the attention of the reader as a storehouse of examples of typical downgrade improvements by which to test our interpretation of the period.

[3] Pp. 744–759.

lists 103 industries each of which had in 1929 a Value Added of over 50 million dollars and also was independently listed in 1919. On the average (unweighted) Value Added increased between these two years by 29 and the ratio between Value Added and Pay Roll by 16 per cent.[1] First, however, we are interested in those industries which, while producing a Value Added of over 50 million dollars in 1929, do not independently occur in 1919, since this in itself proves a very rapid rate of growth. There are 16 of them: beverages,[2] food preparations, millinery, motion pictures (excluding projection in theaters), paper, pulp, rayon, refrigerators, rubber tires and inner tubes, other rubber goods (excluding boots), and typewriters being the most significant ones. Besides repeating cases which we know already, this list adds a few new elements to our picture. Of particular significance is the suggestion, which underlines one feature of that phase of the long cycle, of industries which expanded simply in response to the increase of consumers' real purchasing power and without any particularly strong impulse of their own.

This suggestion grows stronger still if, second, we glance at those among the 103 industries that display an increase in Value Added of, say, more than 100 per cent. Besides aircraft and parts, which heads the list (510 per cent), electrical machinery and supplies, aluminum manufacture, motor vehicle bodies and parts, which we would expect to find, we also meet perfumes and cosmetics, signs and advertising novelties, concrete products, flavoring extracts and sirups, photo-engraving not done in printing establishments, house-furnishing goods, ice cream, printing and publishing (newspaper and periodical). Patent medicines, soap, cigars and cigarettes, cereal preparations, bakery products, while not reaching the 100 per cent line, yet increased their Value Added by much more than the average figure so as to reinforce the evidence. Third, we will note some of those industries the Value Added of which decreased by more than 10 per cent: shipbuilding, locomotives (not made in railroad repair shops), railway cars, pianos, phonographs, leather, beet sugar (Value Added of the cane-sugar industry remained at the 1919 figure), cotton, woolen and worsted goods, flour.

[1] The limitations of Value Added as a measure of the development of an industry, and of the ratio between Value Added and Pay Roll as a measure of innovation or induced and completing rationalization are too obvious to be explicitly stated. It is easy to see, however, in what sense both are relevant to our subject.

[2] The industry of nonalcoholic beverages was, of course, conditioned by prohibition. There were, however, several minor innovations, some of them of a purely commercial type. But prohibition also conditioned the creation of organizations for the illicit trade in alcoholic beverages, which constituted innovations and a new industry in our sense. The somewhat unconventional character of this industry only serves to illustrate some aspects of our concept of entrepreneurship. If we exclude it, this is only because the writer had to come to the conclusion that data were too unreliable for use.

We cannot expect, nor do we find, significant correlation between per cent increase in Value Added and per cent increase in the ratio of Value Added to Pay Roll. Also, some new or relatively new industries, such as motor bodies or aluminum manufactures, understandably show very little signs of the effects of labor-saving devices on that ratio, although, of course, others, such as motorcars or aircraft, rank high, and some of the old and conspicuously noninnovating ones, such as house-furnishing goods (1 per cent decrease), rank low in this respect. It is, however, instructive to observe—and tells a great deal about the general character of the industrial processes of that time—how much labor-saving rationalization went on outside of the great lines of innovation. Thus the ratio between Value Added and Pay Roll increased by 120 per cent with cigars and cigarettes, 85 per cent with soap and with coke (excluding gashouse coke,) 71 per cent with cereal preparations, 61 per cent with manufactured gas, 52 per cent with cutlery and edge tools, 52 per cent with ice cream. Even for tin cans that figure is still 33; for patent medicines, druggists' preparations, coffee roasting and grinding 32; cane-sugar refining 28; meat packing (wholesale) 26; butter 26; cement and concrete products 22; perfumes and women's clothing 17. Only in a minority of cases—printing would be one—was this due to substantive novelties that we have simply been unable to mention. In the main it was the result of that systematic effort to fight, under the pressure of a price level that tended to fall, each cost item by exploring every detail of the productive and the commercial process and by applying and developing techniques the fundamentals of which were fully established before the war, but which in many cases involved not only technological improvement in existing plant but also the erection of new, highly mechanized plant.[1]

f. As pointed out elsewhere, it would for this country be possible to carry our count of Juglars and Kitchins through the war, which never succeeded in blotting them out completely. But in order to avoid a statement which cannot be usefully made unless it be more fully established than is possible here, we will now not go beyond saying that the end of 1916 and the beginning of 1917 might, but for the war, have witnessed what according to our terminology would have been the beginning of the prosperity phase of the third Juglar of this Kondratieff, and that in this case the crisis of 1921 would have occurred exactly when our schema would have led us to expect it, *i.e.*, when that Juglar turned from

[1] See E. F. Baker, Unemployment and Technical Progress in Commercial Printing, *American Economic Review*, September 1930, and Technological Change and Organized Labor in Commercial Printing, *American Economic Review*, December 1932. The great increase in our ratio under the heading Cigars and Cigarettes was in part due to the new machine introduced into cigar making.

recession into depression. Even if we wished to press this—which we do not—it would leave us all the freedom in the world to take into account the effects of war demand and war finance, of the shock imparted to the war structure by the armistice—*i.e.*, the four months of dullness or wavering rather than collapse which followed upon it—of foreign and domestic postwar demand producing the boom of 1919 and, finally, of all that partial liquidation of both war and postwar situations contributed to the slump of 1920–1921.[1] To what has on various occasions already been said about the latter it is necessary to add but two comments.

First, however clear it is that that slump was primarily a process of liquidation of war effects and a reaction to the boom of 1919—which in turn had little if anything to do with innovation—yet the presence, and businessmen's awareness of the presence, of a new industrial situation—a situation which was new in the sense that the consequences of prewar innovations had profoundly altered the cost structure—had much to do with the severe restriction in output of manufactures which first began in January and again, after a rebound, in March 1920, in the face of the facts that retail sales had throughout 1919 increased at a greater rate than had production,[2] that the export trade as yet showed no signs of slackening, that *prices continued to rise*. Banks, moreover, were, by the influx of gold (gold imports in 1921 amounted to nearly 750 millions) and by the reduction of government debt by about 1.2 billion dollars between June 30, 1919 and June 30, 1920, enabled to increase their loans by about 1.5 billion dollars during the same time.[3] All this puts some of the most popular theories out of court in this case. We have once more an instance of "business deflating itself" without any serious outside pressure, and we see again that this could have been prevented only by continuing government expenditure at the war level or a level still higher. The question why business deflated itself cannot be given, even in this case, without reference to our mechanism.

Second, the reaction was sharp and unimpeded and, because it was sharp and unimpeded, relatively short. Prices and wages were allowed to drop drastically, liquidation of commodity stocks and debts proceeded

[1] See W. M. Persons, The Crisis of 1920 in the United States, American Economic Association, 34th Annual Meeting (December 1921). The picture which that paper draws of the situation at the time is perfectly sufficient for our purpose, so that this reference may relieve our text of the necessity of going into details.

[2] This has been emphasized by Professor Slichter, The Period 1919–1936 in the United States, *Review of Economic Statistics*, February 1937. Although considerations of space forbid the presentation of the year-to-year analysis of business situations from 1921 to 1929, carried out for the purposes of this book by Professor E. M. Hoover, comparison between Professor Slichter's business history of the period and the remarks that follow in our text is, nevertheless, invited.

[3] Federal reserve rediscounts reached a peak of 2,827 million dollars on Nov. 5, 1920.

rapidly, elimination of firms—over 8 per cent of the manufacturing firms which were in business in 1919 had disappeared by 1921—was prompt, money rates fell, credit was readily available, and the situation began to stabilize itself in April 1921, the textile and clothing industries, which had expanded first in 1919 and fallen first in 1920, being among the first to revive.[1] The resulting price relations differed greatly from those of 1913 and struck many observers as entirely abnormal. But the change was largely, though not wholly, one of adaptation to new conditions.

Though improvement slackened in October and many signs of continuing liquidation—*e.g.*, further reduction in wages—outlasted the summer of 1922, "deep depression" was over by December 1921. In April 1922 the automobile and tire industries experienced shortage of labor, while stock issues had already revived in January: it was then that the boom in public utility stocks began. Prices of steel, tires, glass, and oil rose in the fall, while those of gasoline, automobiles—the price of tractors had been reduced before by action of the Ford concern—cement, and foods fell. In December 1922 the oil industry was breaking all previous records in output. The fact that such should have been the situation only one year after what nobody doubts had been a major crisis and in the presence of many depressive symptoms—federal reserve rediscounts, however, which fell to a trough of 380 million dollars cannot, owing to the gold influx, be counted among them—is full of potential lessons which are as obvious as they are useless. The case also shows better than any theory could how the system pulls out of troughs under its own steam and how it succeeds in doing so while price level is still falling.

Our diagnosis then, which it would take very strong preconceptions to doubt, is simple: abnormally short depression phase of the Juglar, lasting from the fall of 1920 to July of 1922, owing to abnormally effective liquidation. Alternatively, we could express the same facts by saying that the depression phase lasted to the end of 1922 but that its work had so effectively been done by May 1921 that, the ground being cleared, the prosperity phase of the third Kitchin, which, as we know, still belongs to the depression phase of its Juglar, had unusual opportunities of asserting itself. In any case this Kitchin stands out unmistakably, and there is no reason why we should not so call an undoubtedly short

[1] Of course, the above statement excludes those commodities which, like oil, electricity, gas, meat, motors, had either not fallen at all or fallen only a little. The activity in the petroleum industry has been emphasized before. Several automobile factories which had been shut down reopened in April. The tin can and cigar industries (new plant of the Continental Can, activity of the Bayuk Cigar Company) were also active. So were the shoe and leather and the drug industries. One cigarette company reported that in the first months of 1921 it had earned more than double the whole year's dividend requirements.

cycle which is universally recognized—even if differently dated by students who count from trough to trough—and which completely answers expectation from our schema both as to formal characteristics—length and location included—and as to industrial meaning. On the other two Kitchins which within that Juglar ought to have preceded this one, we will not insist, although it would not be difficult to establish them statistically.

What followed, from either the middle or the end of 1922 on, either is or very much looks like a normal Juglar recovery, which lasted to the autumn of 1925. Our schema would lead us to expect that it contained a setback owing to the Kitchin depression which it tells us should have occurred. It did occur. After it had run its course, recovery resumed and from August 1925 on both Kitchin and Juglar were shading off into the prosperity phases of what then would be the fourth Juglar and its first Kitchin.[1] A few additional facts may be useful. In the first quarter of 1923 the upswing reached its peak. Unemployment was at low ebb—some people spoke of its being "absent"—in February. Most prices, especially those of metals and building materials, tended upward; a record year for construction was correctly foreseen. Steel—19 new steel furnaces were built in 1923—coal, and cotton textiles expanded. Four new power stations were announced for construction. Railroads "came into their own again" and gave orders. Everything except agriculture and ship-building boomed. Wage rates rose strongly. April saw record figures but also a break in the stock market. Signs of slackening activity began to show by August, attributed as usual to external factors, and by December expectations were not very optimistic. They were borne out by the state of things during the spring and summer of 1924. More important than the uncertainties incident to the presidential campaign were the—understandable—reactions in the automobile and oil industries. Steel consumption, railroad traffic, employment, and prices fell.[2] Nothing very serious happened, however; failures of commercial firms were but insignificantly above the 1923 figure; residential building kept up well, and so did power production, the radio industry, and other lines. The first two months of 1925 were disappointing—with employment in most industries below what it had been a year before—and a collapse of the stock market followed in March. During the second quarter business was described as steady but "spotty." New financing and other indications of imminent prosperity asserted themselves under this surface, however, and, with the help of improvement in the agrarian

[1] Professor Hoover wrote in the report already mentioned: "By August the upsurge was unmistakable and the word *prosperity* began to creep modestly back into the vocabulary of the [*Financial and Commercial*] *Chronicle*."

[2] There was an abortive rally in November.

sphere and the—largely speculative—land boom ("real estate subdivided"), the fall wore on amidst record investment, bank-clearing (October) and construction figures, rising money rates and steel prices, stock market excesses (October), failures at record low.[1]

The explanation of all this—the "ignition"—will be found on referring to the above survey of the fundamental industrial processes of the period. They clearly change during those months owing to the influence of several new impulses—while others, such as residential bulding, lost force—and, by conforming exactly to what we mean by a Juglar prosperity, justify our dating. So much is provable and indeed obvious. But we will for a moment trust our schema to the point of absurdity and try to "predict" the subsequent business situations on the assumptions, first, that the fourth Juglar started with the fourth quarter of 1925—although we know that no such exactness is possible in historical analysis—second, that its duration was to be exactly 9½ years—roughly the average duration of prewar Juglars—and the duration of its Kitchins exactly 38 months; third, that all the Juglar and Kitchin phases were of exactly equal length. This absurd experiment yields the following results: the Juglar prosperity lasting into February 1928 should be interrupted by a Kitchin depression from May 1927 to the middle of February 1928; and the recovery of this Kitchin—to the end of November 1928—and the prosperity—to the middle of September 1929—and the recession of the second Kitchin should then run their course within the Juglar recession ending with June 1930. At that date both the Juglar and the Kitchin should enter upon their depression phases on a Kondratieff that had already entered upon its own,[2] so that the configuration of 1873 would be repeated. The reader will realize that no value attaches to, and no significance is claimed for, the exact dates. But he will also realize that the absurdity stops at the assumptions which are responsible for the exact dates. Stripped of this unwarranted exactitude and confined to essentials, the "predictions" of the schema are not absurd but on the contrary tell several important truths—and not a single untruth. It

[1] Mr. Thorp's Annals closing with 1925, we may compare his description with ours. Bearing in mind differences in terminology, we find almost complete agreement. He notes what above was described as dullness in 1918 ("recession") and the boom of 1919. 1920 is by him described by prosperity-recession-depression, 1921 by depression. 1922 is a year first of revival then of prosperity, which is obviously meant to convey exactly what was meant above. In 1923 there was prosperity-recession and in 1924 mild depression-revival. 1925 Mr. Thorp describes, as we should expect he would, as a year of prosperity without qualification. The present writer is not sure whether employment was really "full" or that the rise in bond prices accords with the pattern of prosperity. But there is no material difference in diagnosis.

[2] It will be remembered that according to our schema Kondratieff depressions begin with Juglar prosperities. The depression phase of the current Kondratieff would, hence, date from the fall of 1925.

should be added that the comparative severity of the setback in 1927, which was to occur and did in fact occur within the prosperity phase of the Juglar, does not in itself run counter to expectation: the depression of a Kitchin, located as that one was, after the end of the Kondratieff recession, should be well marked.[1] On the other hand, the boom of 1928–1929 was more violent than our schema leads us to expect, which in explanation has but a Kitchin recovery and a Kitchin prosperity to offer. This may, however, be accounted for by certain autonomous monetary factors and the influence of the speculative mania, of which the first do not form part of our model and the second—also present in 1872–1873—is always an irregular factor.

The stock market suffered collapse in February 1926. But this is merely a normal incident of a Juglar prosperity outgrowing its initial stage. A no less regular phenomenon was, on a Kondratieff depression, the tendency of prices to sag. If business conditions began to display signs of "relaxation" already by April, when automobile concerns did not do so well as they had a year before and the cotton, silk, sugar, and other industries headed toward curtailment, and if in May there was also a decline in steel production, this is sufficiently accounted for by previous speculative excesses, in particular by the passing of the real estate boom. The stock exchange recovered by June, and almost everything was again at prosperity levels by August, motorcars and textiles included, furniture enjoying record profits. Oil developments in California, in North Texas, and on the Gulf Coast did not entail any large increase in stocks. By October, however, the 1927 setback came definitely in sight. The stock market discounted it, bank debits were running from 5 to 9 per cent below the figures of the preceding year, demand for steel dropped until operations were at 65 per cent capacity. Failures increased. Car loadings also were at the end of what nevertheless was a record year at a lower figure than they had been in 1925. Some anxiety was felt about installment sales.[2] The agrarian situation had also become more unfavorable.

[1] Professor Mitchell dates one of his cycles from 1927. Since the writer naturally wishes to differ as little as possible from so outstanding an authority, he begs to emphasize that no difference in diagnosis of situations is implied in such dating, because it is simply the consequence of Professor Mitchell's principles to count from trough to trough and to recognize but a single type of cycles. The particular pattern under discussion seems well qualified for suggesting that some important elements of reality are being missed if we put troughs such as occurred in 1924 and 1927 on the same level with troughs such as occurred, say, in 1908 and 1921, and these again on the same level with the troughs of 1875 and 1932, and that the distinction of cycles of different type seems the natural way of recognizing these very real differences.

[2] Consumption was at a high level. But no less than 10 per cent of the cars sold during that year could not be paid for and had to be repossessed by the dealers—a good illustration of the theory of underspending or oversaving.

Until May 1927, however, general business kept on a high level in spite of all that and even improved, several new things—the Chevrolet and Frigidaire successes, motion pictures, the North Carolina power plant, a number of smaller events—supplying impulse. In April business was prosperous. But then a definite decline set in—which we may identify as a Kitchin depression—intensified by widespread recognition of unsound practice in many fields, with retail and wholesale trade at a lower level, many failures, and cautious reserve in large-scale business. Building, the condition of which was complicated by the liquidation of the Florida boom, was a particularly weak spot. The fall in automobile production was, of course, due to the reconstruction of the Ford plant.[1] The Mississippi flood, while it also explains some things about the behavior of physical indices, has in other respects to be listed as an impetus. There was no slump. Good business in the cotton, rayon, and shoe industries and a continuing stream of new things—Diesel-engined locomotives, gas-pipe lines, the refrigerator merger, development of the Kraft paper industry in the South, radios—were features throughout. By December improvement was almost general, although employment in building was still 12 per cent below that of a year before.

Railroad earnings, steel production, and gasoline markets improved in January 1928, and the "bankers' loans boom" in the stock market was getting under sail with automobile, copper, and rubber stocks leading. But the general business situation[2] behaved until March (even in March there was considerable unemployment) in a manner which is in our terminology not badly rendered by the phrase "conditions of Kitchin depression relieved by a Juglar prosperity." In April, however, steel was at record rates. So was tire production and by June everything—building, the automobile (contraseasonally) and the oil industry included.

[1] But the writer fails to understand how some observers could have attributed the 1927 depression wholly to that fact.

[2] The contemporaneous comments of the public press, and business opinion as revealed by public utterances of executives and so on, quite correctly realized and sized up some of the fundamental elements of that situation. The writer's impression is that there was not only more insight but also more foresight in considerable sectors of the business community than is in general realized, and also more than is compatible with some theories which overstress the element of error in the explanation of depressions. But one also finds the tendency, especially in press comments the authors of which aim at semiscientific explanations, to overstress external and banking factors. The preceding note affords an example of the former type. The latter type is instanced by the emphasis on Federal Reserve Board policy in explanation of the state of things in the first two months of 1925 and again the first two months of 1928. In both cases the industrial process itself supplies much more plausible explanations. But it is easy to understand how tempting that explanation was, especially for writers whose contact with business was primarily through the money market and who were strongly influenced by the scientific and pseudoscientific "theories" of the epoch.

Symptoms of "high" prosperity then went on intensifying themselves until October, when mail-order sales broke all records. Construction of new plant—for old as well as for some new purposes—new financing—taking advantage of the stock-market boom—dividends, money rates, and so on were all in keeping with the rest of the picture, into the details of which we are unable to go. There were two apparently discordant elements, however. First, unemployment increased. Second, commodity markets though buoyant were not really sellers' markets: the almost desperate efforts made by the sales organizations of big and small concerns and the fact that such increase in prices as occurred was insignificant, while many important prices had to be reduced, indicate a certain strain in the system.

Now if the reader will remember the writer's various attempts to convey his idea of a Juglar recession, he will appreciate the warrant for expressing that state of things by saying that it was exactly what we should expect from a Juglar recession on a Kondratieff depression coupled with the two positive phases—strictly, according to our experimental schema, the recovery phase only—of a unit of the short cycle: good and expanding business accompanied by increasing unemployment and by that strain which is the consequence of the "avalanche of goods" smashing its way through the resisting framework of the existing industrial structure—this is precisely the picture which would result from that particular juncture. As stated before, however, there is no doubt that the developments between April 1928 and August 1929 added to the situation many of the untenable elements[1] which subsequently served to intensify the crisis.

October 1928 brought the first symptom of slackening activity, which was, however, to disappear temporarily by January 1929: with the exception of Ford, all automobile producers then decreased their purchases of steel.[2] In November total building fell off more than seasonally. But barring building and production of building materials, which continued to decline, most lines of industrial and commercial activity surpassed 1928 output figures during the first six months of 1929 at (from September 1928) falling prices but high profits. Also plant construction and financing seemed to have taken out a new lease on life. Quite a list of new things (at least of the "induced" type) were being inaugurated in June, when pig-iron production reached a maximum. Moreover, the

[1] This question will be touched upon in the next section. But it is clear that whatever it was that may have to be explained by either the mania or monetary factors or both together superimposed itself on, and made "excesses" of, "normal" phenomena of the same nature.

[2] The effect on the steel industry was, however, mitigated by a simultaneous increase of demand from the oil industry.

aircraft, radio, refrigerator industries prospered. So did automobiles, tires, machine tools and other implements, hardware, cotton, silk, rayon, and cigarette production.[1] The Kettleman Hills oil field was discovered. Mail-order sales were running far above the 1928 level. Department-store sales reached a peak in September. Extra dividends were paid in the last week of August by oil, chain-store, mail-order, steel, and flour concerns. The agricultural situation became a matter of serious concern. The United States Treasury was paying $5\frac{1}{8}$ per cent in June; federal reserve rediscount rates rose to 6 per cent by August.

Although there is a valid objection to any such statement, we may take April to mark the peak of that (Kitchin) prosperity. But even the inadequate description presented is sufficient to show that, whatever may have been wrong in the financial sector, the great divisions of industry and commerce either expanded[2] or contracted—steel, motorcars, building—in a perfectly orderly way during the subsequent months through September. It is, therefore, understandable that when the stock market—not altogether unexpectedly—collapsed, this did not cause paralysis or even particularly strong pessimism in the business world. What immediately happened was in fact not much more than was foreseen, *viz.*, a drastic reduction in the demand for "luxuries," of which speculative gains in stocks had been a most important feeder. The repercussions of this were expected to induce and did induce contraction all round, but with money rates failing to rise to panic figures—as compared with their reaction in prewar crises—improvement was confidently predicted for the first half of 1930. Among characteristic reactions of "big" business we may note that Ford announced a substantial reduction in prices, that United States Steel and American Can declared extra dividends, and that prevailing opinion was strongly against a decrease in wages. The withdrawal of foreign funds, the agrarian situation, and such liquidations of concerns as occurred[3] were—quite correctly—not considered decisive.

It is of the utmost importance to realize this: given the actual facts which it was then possible for either businessmen or economists to observe, those diagnoses —or even the prognosis that, with the existing structure of debt, those facts plus a drastic fall in price level would cause major

[1] The following industries registered gains in employment in July: slaughtering, ice cream, flour, pipes, structural ironwork, machine tools, furniture, shipbuilding, oil, fertilizers, boxes, cement, electrical machinery, rayon, radio. Machine-tool orders reached their peak in May. Value of exports rose to March.

[2] Some of them—tin, rayon, and paper, for instance—did so vigorously in the third quarter, a few even in the last week of the year.

[3] They were—in industry and commerce—anything but sensational. In the last week of the year, for instance, the more important ones were those of a South Carolina cotton mill and of the Laconia Car Company. A securities company also failed during that week.

trouble but that nothing else would—were not simply wrong. What nobody saw, though some people may have felt it, was that those fundamental data from which diagnoses and prognoses were made, were themselves in a state of flux and that they would be swamped by the torrents of a process of readjustment corresponding in magnitude to the extent of the industrial revolution of the preceding 30 years. People, for the most part, stood their ground firmly. But that ground itself was about to give way.

F. The Behavior of Systematic Series from 1919 to 1929.—Discussion will conveniently begin with three of the four series which enter into our Pulse Charts (I). Then we shall discuss the behavior of (outside) debits, incomes, and so on (II), and finally some of the series which reflect the processes of the spheres of banking (III), speculation (IV), and monetary management (V).

I. It should once more be emphasized that speaking of phases of an incomplete Kondratieff involves a hypothesis which the future course of things might easily fail to bear out, even if this future were less likely than it is to be dominated by external factors or, if some of us resent application of this term to government action, by public expenditure, control, and planning. However, for the period under discussion that hypothesis may be checked statistically, as in the preceding section it has been checked historically, by confronting with the actual behavior of time series the expectations which follow from that hypothesis. During a Kondratieff recession of which the years from 1919 to (the fall of) 1925 form, according to the schema, a part, and during a Kondratieff depression to which the remaining years belong, we on the whole expect output to increase strongly, more strongly than in the preceding Kondratieff prosperity; price level and interest rates to fall; and balances to increase but (barring government or central bank action and autonomous, or at any rate external, changes in the quantity of monetary gold) less strongly than output and also at a rate smaller than that at which they increased in the previous upswing. Some explanations and qualifications will be added in each case. But a difficulty which has been encountered already must be mentioned again. Since there is no way of isolating the effects of our process and since we can do but little more—a little more we can do[1]—than indicate the direction of the movements it tends to bring about, we cannot numerically determine the extent to which our process has been deflected by influences external to it, especially by influences

[1] Comparison with the rates of change that obtained at comparable junctures in the past is not, however, a method that can be trusted. We have only two such analogous cases. And each of them displays peculiarities of its own. Even if that were not so, there is no warrant for expecting that, for example, the rates of increase in output and of decrease in price level should be the same in each instance.

which acted on some element of the system in the same direction as that process itself.

a. 1. Our expectations as to the behavior of Total Physical Output or, if we wish to exclude the influence of the short fluctuations in crops that are due to influence of weather, of Total Output of Manufactures (and Mining) call for the following qualifications. First, we know that they do not apply to those subphases which we call *deep depressions.* We know, in the second place, that on a Kondratieff downgrade prosperities of the shorter cycles should display greater and not smaller rates of

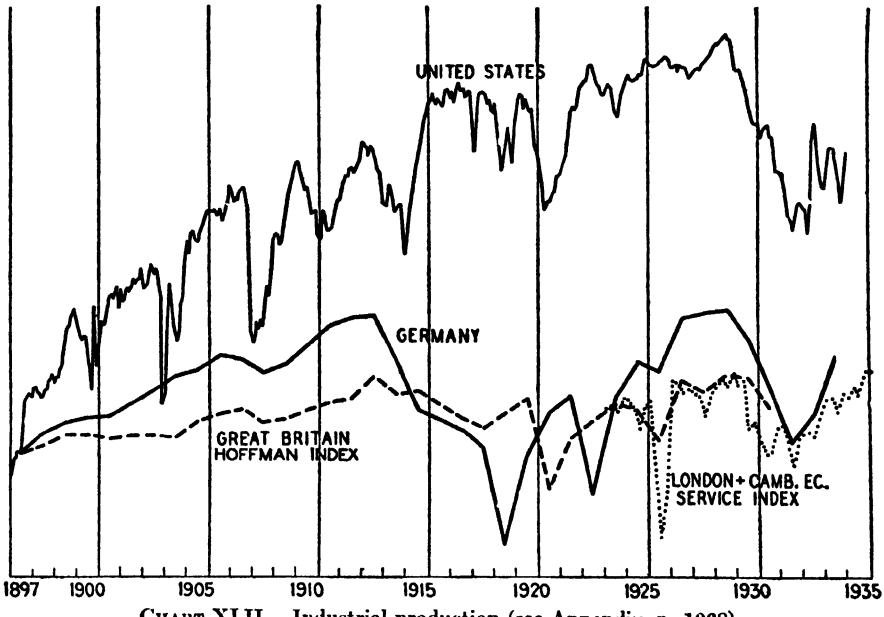


CHART XLII.—Industrial production (see Appendix, p. 1068).

increase because, the general conditions of a Kondratieff downgrade setting the stage for strong increase of output, this increase is likely to show with particular emphasis under the influence of additional producers' expenditure. Third, it must be remembered that for Kondratieff downgrades in general, but especially for the one under discussion, our indices are still more than usually likely to understate the rate of increase because —not to insist again on the unduly great role which most indices attribute to basic producers' goods—increased supply of intangibles (services of all sorts), increased voluntary leisure, economies in the use of raw materials and of intermediate products, and improvements in quality constitute, as we have seen, outstanding features of the period. With these provisos in mind we will now inspect Chart XLII, which presents the

curves of industrial output for our three countries from the beginning of the Kondratieff at which they have been made to coincide.[1]

The first thing that strikes us is the extent of the differences in both the long-run and the short-run behavior of the three curves. Obviously the war is only in part responsible for it. The United States curve, keeping its more lively temperament throughout—the reader will remember that we account for this mainly by the pace of American development—shows the Kitchins with a clearness that leaves nothing to desire. War expenditure merely accentuated their positive phases at the expense of the negative ones. The Juglars could not be read off correctly, although we can trace them if we interpret the curve in the light of business history. War effects make it difficult to test our Kondratieff expectation. A linear trend drawn through the items from 1898 to 1912 would, however, display a smaller gradient than would a trend drawn through the items from 1922 to 1929 which, considering that we are using a log scale, may perhaps be held to spell acceptable verification. But we do not insist on this. It is more significant to note that from 1899 to 1912 output of manufactures increased at most by between 70 and 80 per cent and from 1912 to 1929 by at least between 135 and 145 per cent of the 1899 figure. Figures per head of population suggest the same conclusion. According to Professor Mills, average annual per capita increase, excluding construction and personal services directly consumed, was roughly 1.1 per cent for 1901 to 1913 and 2.4 for 1922 to 1929.[2] Inclusion of building would, of course, strengthen these indications. Census figures of value added, corrected for price level, also behave according to expectation.

It should be observed that there is nothing in this record of postwar developments to support a belief in retardation and, in particular, a belief in the restrictive tendencies that are held to be inherent in monopoloid large-scale business. Neither is there in it anything that could, from experience with cyclically similar periods in the past, be called

[1] Neither the curves on this chart nor the output curves in the pulse charts are strictly comparable (see Appendix). In method as well as in quality of material and in coverage the indices differ to a dangerous extent. Nor have the League of Nations' efforts availed to supply us with really comparable indices. See also N. J. Wall, Monthly Index of World Industrial Production, Preliminary Report, United States Department of Agriculture, June 1936, and G. F. Warren and F. A. Pearson, The Physical Volume of Production in the United States, Cornell University Agricultural Experiment Station, *Memoir* 144, November 1932.

[2] *Cf.* Economic Tendencies in the United States, Chap. I, especially p. 244. The figures of average annual increase for the two periods are 3.1 and 3.8 per cent respectively, hence also according to expectations. Mr. Leong (*Journal of the American Statistical Association*, March 1932) gives 3.5 instead of 3.8. It is interesting to note that from 1899 to 1929 physical output increased by about 200 per cent. Horsepower installed in manufacturing plants increased by about 330 per cent.

astounding, unheard-of, or abnormal.[1] In that respect the capitalist machine seems simply to have been working as it previously did in comparable epochs. Of course, figures of total, or total industrial, output can never prove anything—either in themselves or by comparison with money incomes—about the presence or absence of "overproduction." Aggregates may, as we know, hide any amount of maladjustment. But the impressive steadiness of the process[2] and its perfect accordance with the past is still important to note.

The German case hardly calls for comment. There is no need to elaborate the reasons why war demand, impinging as it did in both countries on the productive possibilities of a Kondratieff recession, produced the spurt in output which we should expect from this in the United States only, whereas it caused a slump in German output. Rebound from the trough in 1919 was first prolonged and then drastically reversed

[1] The rate of increase could be made spectacular only by counting from the trough of 1921 or the beginning of 1922 to the peak of 1929, which would be devoid of sense and, in particular, distort the comparison with England. We will notice at once that this also applies to output per man-hour. The spectacular rate of increase in 1922 only made up for the low ones—or even backslidings—which preceded. It has been rightly said that industrial efficiency sank to a low level during the war and that American industry, too, emerged from it with an antiquated and overstaffed apparatus, in fact in a drowsy state which illustrates both an important aspect of "inflation" and the function of cold douches such as the one applied in 1921. Measuring "efficiency" by deflated national income divided by hours of work done, we get a minimum for 1917. For 1923 to 1929 Professor Mills (*op. cit.*, p. 297) gives an average annual increase in output *per wage earner* in 62 manufacturing industries of 2.7 per cent. For the precise meaning of this, see footnote on that page. The increase of physical output itself during those 6 years Professor Mills puts at 19 per cent, the average annual rate being 2.8 per cent. Of course, "secular" shifts in the economic organism partly show in the sharp decline that occurred from 1920 to 1930 in the percentage share in the total of persons gainfully employed in agriculture, fishing, and lumbering; in the smaller but still significant decline of the share of manufacture and mining; and in the sharp increase of the share of trade, transportation, clerical work, and services.

[2] Again the writer largely agrees with Mr. Carl Snyder's well-known views on that subject. But it is perhaps not superfluous to emphasize once more that an impression of retardation such as Mr. A. F. Burns attempted to establish is perfectly understandable on statistical and other grounds, especially in a period characterized by economies in the use of raw materials, and that an extrapolation may easily fail to be verified by events owing to the influence of institutional factors or of the effects on motives of the falling birth rate or, in the end, of saturation. We will use the opportunity to quote Mr. Burns on another point. "We may therefore conclude from our analysis of American experience since 1870: first, that periods of sharp advance in the trend of general production, which are characterized invariably by considerable divergence in production trends [quite so. J. A. S.], have been followed invariably by severe business depressions; second, that most of the business depressions of marked severity have been preceded by a sharp advance in the trend of general production and considerable divergence in the trends of individual industries." (Production Trends, p. 251.) For Kondratieff downgrades at least, we entirely agree.

(1923) by inflation and the events that culminated in the Ruhr invasion. What may be termed the Dawes recovery, which was cut short by a reaction that was intensified by fiscal policy, and the upswing from the middle of 1926 on, which, as we saw, looks so much like a Juglar prosperity, are well marked and, very roughly, in step with American cycles. That upswing was, as far as output figures go, relatively stronger than in this country: the Berlin Institute's monthly index of industrial production, for example (basis July 1924 to June 1926), reached a maximum of 129.2 in February 1928. The Wagenführ index of output of manufactures and mining, plotted on our chart, differs in details but substantially conveys the same impression. But this meant little more than that the losses of the war and inflation periods were being made up for —unlike the United States, Germany had by 1929 gained but modestly as compared with 1913. Output per employee increased in the aggregate roughly by 13 per cent from 1925 to 1929.

As to both facts and interpretation the British case is more doubtful. Our graph shows, of course, decline during the war—understandably milder than in Germany—and the trough of 1921, which we interpret in the same way as the more serious American one. We then observe what makes a good last Kitchin of the third Juglar and the two first Kitchins of the fourth Juglar, the beginning of the latter being blurred by the events of 1926. But the graph also shows that the long-run behavior of the British curve differs characteristically from that of the two others. *This difference does not date from the war* but is, on the contrary, just as much or more marked in the first decade of the Kondratieff, for which it has already been discussed (Chap. VIII). So far we may accept the testimony of our graph. The post-war behavior of British output is, however, inadequately rendered by it and has been proved, by Professor P. Douglas, Mr. Colin Clark and other students, to come much nearer to American achievement that the chart suggests.[1] We may confidently assume that British industrial production increased by at least 20 per cent between the census of 1907 and 1924 and by at least 10 per cent between the latter year and 1929.[2] In support and explana-

[1] Both the Hoffmann index and the quarterly index of the London and Cambridge Economic Service, which has also been plotted, are unsatisfactory as to coverage and attribute too much weight to old and relatively declining industries. But for the prewar period their reliability has not been called into doubt by later work, although to some extent the same argument also applies to that time. Mr. Colin Clark (Statistical Studies on Great Britain, *Economic Journal*, September 1931) accepts Mr. Rowe's index for 1907 to 1913 and calculates from this index and Trade Union unemployment percentages an index of output per head which for 1913 only reaches the 1907 level again. To the present writer this estimate seems too low, but there cannot be any doubt but that increase was much below the American and German rates.

[2] Until 1930 a somewhat pessimistic estimate conforming to the impression conveyed

tion, the fact should be mentioned that the ratio of imported products to total production of manufacturing industry was, throughout the period, smaller than it had been in 1913—industry shifting, to some extent at least, from production for export to production for the home market—a fact which stands out particularly clearly when figures are corrected for those raw materials that had to be imported in both cases (*cf.* Colin Clark, *op. cit.*, p. 351). The improved picture still leaves us with an impression of inhibited performance, but otherwise bears out expectation as to the behavior of industrial output in a Kondratieff downgrade.

2. Again, there is nothing suggestive of abnormalities or new problems in the behavior, relatively to each other, of the aggregates into which output of manufactures is usually divided. In order to exemplify this, it will suffice to observe the behavior in this country of producers' and consumers' goods, on the one hand, and of durable and transient goods, on the other (Chart XLIII).

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by our chart very generally prevailed, in spite of certain objections that were raised against it (as, for instance, by Mr. G. L. Schwartz, *Economic Journal*, March 1929). Professor Bowley and Sir J. Stamp (The National Income 1924, 1927, p. 55) arrived at the conclusion "that real home-produced income per head (of population) was very nearly the same in 1911 and 1924; it is improbable that it was any greater in the latter year, and it may have been 4 per cent less." And the *London and Cambridge Economic Service Bulletin* for April 1930, stated that from 1924 to 1928 output per head (employed) was "stationary or decreasing." This was, on the strength of new evidence, corrected in the *Bulletin* for June 1930 so as to read that there had been during those years an increase of 4 per cent, and another of 7 per cent from 1928 to 1929. Mr. Colin Clark (*op. cit.*, p. 357) comparing the value figures of the 1907 and 1924 census of the Final Product of Industry minus Primary Materials Purchased by means of a more appropriate price index arrived at a Net Output of Industry of respectively 675 and 820 million pounds of 1907 purchasing power, an increase of 21.5 per cent. Douglas and Tolles (*Journal of Political Economy*, February 1930) proceeding by another route even arrived at 23.5 per cent. As pointed out by Mr. Clark, it would follow that real output per worker increased by about 10 per cent, in spite of the reduction of hours. These estimates, so it seems to the present writer, cannot be far from the truth although, for the purposes of a comparison with the United States, it must not be forgotten that downward bias is not altogether absent from American indices either. For such a comparison see A. W. Flux, Industrial Productivity in Great Britain and the United States, *Quarterly Journal of Economics*, November 1933. For the behavior of industrial output from 1924 to 1929 both the Board of Trade Index of Production and the Annual Index of the London and Cambridge Economic Service—the latter after elimination of agriculture and dwelling-house construction which it contains—may be alternatively used. Using the former and deducting from the figure of all insured persons in employment those engaged in building, transport, distribution, and services, Mr. Clark (*op. cit.*, p. 360) calculated another increase of output per head in manufacturing and mining of 10 per cent for 1924 to 1929. Mr. E. Devons (*Economic Journal*, September 1935) gives 15.1 per cent after excluding from the employment figures all items not covered by the Board of Trade index. On the London and Cambridge Economic Service indices see also Rowe, An Index of the Physical Volume of Production, *Economic Journal*, June 1927.

We find the divergences which we should expect and, in particular, we see that the output of consumers' goods *as a rule* (notably in 1924 and from the beginning of 1930 on) decreases less strongly in troughs and increases less strongly on upgrades than does the output of producers' goods. But we also find, exactly as we did in the case of comparable

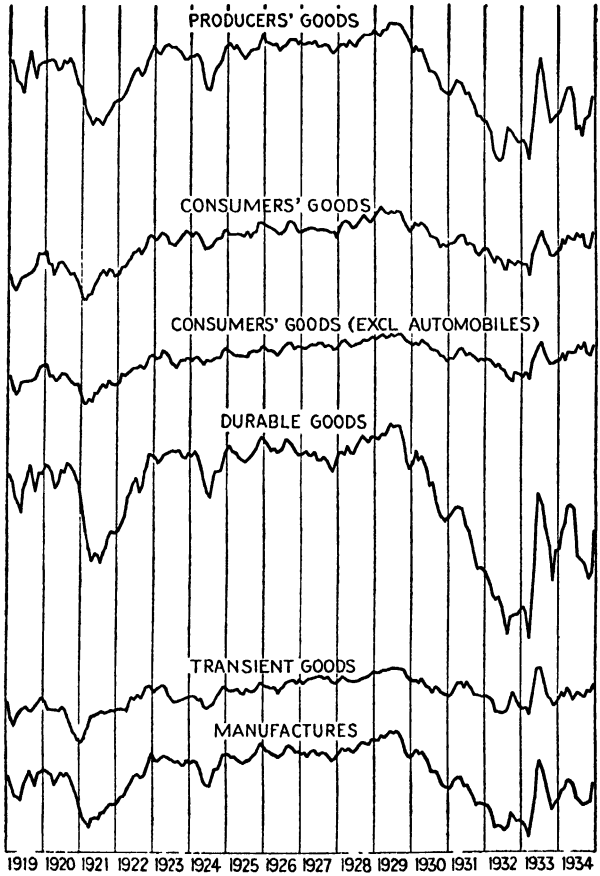


CHART XLIII.—United States production series (see Appendix, p. 1068).

prewar series, that the difference is, excepting the years from 1919 to 1921 and those of the world crisis, neither so strong nor so regular as some theories suggest. On the whole, both series move well together.[1] Again,

[1] This holds for other countries also. See, for example, *Statistical Yearbook of the League of Nations*, 1931, Table 91. In Germany output of producers' goods (1928 = 100) was 97 in 1927, 106 in 1929 and 82 in 1930, output of consumers' goods (1928 = 100) respectively 99, 94, and 86. The fact that the latter should have fallen so considerably while the former was still rising is partly due to the particularly strong downward bias of that consumers' good index (textiles, motorcars, boots, china, pianos, watches and

the really significant difference is between durable and nondurable goods. Since the relative importance in the consumer's budget of the former naturally increases with increasing wealth, we have here a factor—though not necessarily a decisive one—which makes for increasing amplitudes of cyclical fluctuations: to take an outstanding instance, new passenger car registrations dropped from about 3.8 millions in 1929 to 1.1 millions in 1932.[1] It is interesting to note that while production of durable producers' goods and production of durable consumers' goods moved substantially parallel,[2] yet the latter increased more strongly. The average annual rate of increase in the production of industrial equipment —including nonresidential construction—was, according to Professor Mills' estimate, 6.4 per cent for 1922 to 1929.

Of course, excepting special cases, we do not know with any exactness how much of this was mere replacement, how much was replacement plus improvement, how much was net addition, and how much of that served new purposes. Even if we did, comparison of this figure with prewar rates might easily be misleading, because the period under discussion happens to end with a Juglar prosperity and a Juglar recession in which real investment would be higher than usual. But Professor Kuznets' figures suggest that real investment was much more modest than is very generally believed[3] and lend little support to any of the current theories of the overinvestment type. This, however, does not mean that production of equipment goods had nothing to do with the crisis, for it undoubtedly reflected the process of industrial reconstruction, which was going on at an increasing rate that implied quick obso-

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paper), yet is not wholly spurious. Investment in equipment industries was an outstanding feature during the years from 1926 to 1929.

[1] Figures from R. L. Polk and Co., as published in Automobile Facts and Figures, 1937 ed., by the Automobile Manufacturers' Association. There was, moreover, the shift toward cheaper cars.

[2] Together, durable-goods industries of both types employed, in the average of 1921 to 1930, about 52 per cent of all factory workers (estimate by Colonel Ayres).

[3] See S. Kuznets, National Income and Capital Formation, 1919–1935 (1938), Table 13, p. 48. The relevant item is II, 1, *b*, net capital formation by business exclusive of net changes in inventories (which are of a special nature and should not be lumped together with plant and equipment; the reader will furthermore recall the reasons why we exclude residential building and "public capital formation," excepting productive establishments owned by public bodies). At 1929 prices the average of 1919 to 1929 is only 2.5 billions. But owing to the course of the cyclical phases, the series moves successively on three different levels: around an average of 1 billion, 1919 to 1922; then for 2 years at 2.3 billions per year, while for 1925 to 1929 the average is 3.7 billions. This also shows (the 1929 figure, 4.3 billions, is the highest) that there was no slackening in real investment previous to and independent of the crisis itself. The employment index for the machine-tool industry (1926 = 100) gives the same impression. It was 82 for 1924, 85.8 for 1925, 100 for 1926, 92.8 for 1927, 100.8 for 1928, and 129.8 for 1929.

lescence and was bound to enforce drastic adjustments and to pass death sentence on many plants and concerns. That process is, as we know, the very soul of every recession or depression. Some of these adjustments, in the motorcar industry for instance, were carried out currently. Others were not, and from this source flowed what may indeed be called an accumulation of maladjustments, though it would be wrong to attribute it to an *overproduction* of equipment. Extensive liquidation became necessary—not, however, in order to reestablish an equilibrium disturbed by overexpansion in aggregates, but in order to reestablish an equilibrium disturbed by innovation the roots of which dated back to the nineties. This, of course, formulates the matter in terms of the long wave only, but the influence of the Juglars and Kitchins can easily be inserted.

Other evidence strengthens the case for interpretation in our sense. Among other things, the attitude of businessmen accords very well with it. As pointed out in the preceding section, we find throughout the twenties and in the midst of prosperities businessmen struggling against the results of their own actions—those phenomena repeatedly noticed in this book (for example in Chap. III) which, ranging from talks about overproduction and lack of purchasing power to support given to certain types of corporative action and planning, were eventually to find expression in the NRA legislation, the idea of which characteristically enough originated in business circles. This is precisely what we should expect to observe in the course of the competing-down process. It is a question of some interest whether these tendencies were any weaker in the twenties and seventies of the nineteenth century. Certainly, they met with less success than they eventually did in our own time. Capitalist governments and parliaments were much less anxious to guarantee profits and to protect from losses than their less capitalist-minded successors. And there is really no paradox in this.

Moreover, throughout the twenties and even in the heyday of prosperity phases and high profits there was considerable excess capacity[1]

[1] It has been pointed out before that excess capacity in any relevant sense is extremely difficult to establish and to measure, and why this is so. The work by Nourse and Associates, America's Capacity to Produce, has been severely criticized. But it seems permissible to say that the evidence there presented suffices to support the statement in the text. The same may be said of the study of a number of industries by R. F. Martin, *Bulletin of the Taylor Society*, June 1932: nearly every one of the industries covered displayed underutilization of capacity in every year, 1921 to 1932. The question was also investigated by a subcommittee of the Columbia Commission on Economic Reconstruction (see *Report*, Appendix I). First, that committee was permitted to use the results of a study by L. P. Alford and J. E. Hannum on four industries, and second, it issued a questionnaire of its own to a considerable number of engineers and executives. Results are more relevant to efficiency (as measured by product per man-hour) than to degree of utilization and give

which was not confined to ailing industries or regions nor entirely explicable on oligopolistic strategy. The reader knows how many fundamentally different situations are covered by that term and it is clear that instances of all of them could easily be adduced. The one that is relevant here consists, first, in the presence of old plant—it need not be old in years—simultaneously with new plant and, second, in the frequent necessity of erecting plant and equipment on a scale intended to provide for future developments of demand. As we have seen before, the more progressive an economic system is, the more of these types of excess capacity it must display—and, also, would have to display in a socialist state. This has palpably been the case in this country during the twenties. There are few industries, such as oil and shoes, in which presence of plant not used up to economic optimum is clearly of another type, *i.e.*, not incident to some process of change. The usual reasoning about excess capacity in general, therefore, entirely misses the salient point, but the relevance of the facts so designated to the explanation of the subsequent crisis becomes only the more obvious. Planned resistance by producers is, of course, likely to accentuate consequences.[1]

3. Finally, like excess capacity, supernormal unemployment is—precisely in association with strong increase in output—an essential element of our picture of Kondratieff downgrades. We have observed it—each time in that characteristic association—in the two previous instances, and we find it in this. The postwar unemployment is, however, a complex phenomenon and will have to be touched upon again below. Here it is only the technological or rationalization component which calls for notice. Some facts and figures about product per man-hour or wage earner have been mentioned already, which also show once more how misleading must be any theoretical schema that assumes proportionality between output and employment for any period longer than a Kitchin. In further illustration we will glance at a few data taken from the investigation of the Berlin Institute on unemployment in Germany.[2] Product per workman increased from 1926 to 1929 (1930) by 25 per cent in the

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rise to various doubts. It is, however, interesting to note how (relatively) often the question what factors had been responsible for keeping output below the—widely differing—estimates of possible maxima, has been answered by "competition and substitution." As might be expected, lack of effective demand was the most frequent answer and the one which seems particularly to have impressed the committee. In view of the inference drawn from it, it is perhaps not superfluous to state that it does not follow that inadequate money incomes were the villains of the piece.

[1] "For we think that the violence of the convulsions such as recurred 1907–1908, 1920–1921, 1929–1933 is due largely to the partial character of the liquidation effected during mild contraction." Professor W. C. Mitchell in National Bureau of Economic Research, *Bulletin* 61, for Nov. 9, 1936.

[2] A. Reithinger, Stand und Ursachen der Arbeitslosigkeit in Deutschland, 1932.

iron, steel, metal, machine, and motorcar industries; by 18 per cent in mining; by 16 per cent in the woodworking industries; by 15 per cent in building; by 13 per cent in the chemical industry; by 10 per cent in the paper, printing, food, and textile industries; by 5 per cent in the leather industry. Comparable figures of employment are not available in all cases. But we know, for instance, that in the production of crude steel employment fell between 1925 and 1927 by about 10 per cent; in coal mining between 1925 and 1929 by over 5 per cent, in the motorcar industry also by about 5 per cent; while in the machine, paper, printing, electrical, chemical, building, food, textile and clothing, woodworking, and ceramic industries there was (mostly modest) increase. Fuller data for output per wage earner or even per man-hour in individual industries are available for this country. Reference should again be made to Professor Mills's Economic Tendencies.[1]

But while increase in product per man-hour may be used to illustrate one aspect of that period of rationalization, it is not superfluous to repeat that—irrespective even of purely statistical questions that may make all the difference in results—it must for the purpose in hand be used with more caution than is usually applied. It does not, of course, either isolate or measure the technological component, if indeed the word *component* be permissible at all, of total unemployment or the effect of innovation on total output. It is a gross error to look upon change in product per man-hour and change in total production as two independent factors militating against each other and producing actual employment as their resultant. Moreover, nothing about "secular" trends or tendencies inherent to the system can be inferred from the survey of the facts of so short a period, in which ultimate results cannot possibly have had time to show their true faces and which was one of rapid readjustments. Nevertheless, we may confront the impression conveyed by figures about man-hour product with the behavior of employment on the understanding that we are dealing with but two of many interdependent variables and that no conclusions about causal relations can be derived in this way.

Total employment increased, of course, in all three countries. Part-time employment—to which it would strictly be necessary to add uneconomic employment, especially in agriculture—changes in school age and in enforcement of attendance at school, in the employment of women, in age distribution, for Germany also the abolishment of compulsory military service and partial annihilation of the *rentier* class not only make comparison with changes in population more difficult, but also deprive it of much of its meaning. But it may be stated that available indications for this country and for Great Britain point to the conclusion that

[1] See in particular pp. 296 and 297.

total employment increased from the end of 1922 to the end of 1929 in such a way as to produce no—or, if the reader prefer, a substantially horizontal—"descriptive trend" in unemployment percentage. Although that level was, as we should expect, considerably higher than during the Kondratieff prosperity, there must, hence, have been "absorption of the technologically unemployed" and of the increase in employable population within that period in this sense, although in no other.[1]

Of course, this does not apply to any individual industry or group of industries. Manufacturing, or manufacturing and mining, forms, for the purpose in hand, an arbitrary group. Also, since it includes the most "progressive" branches of economic activity, it is not a random sample. Hence, no conclusions can be drawn from its conditions alone. In all three countries employment in manufacturing industries increased but slightly, if at all. In Great Britain the number of persons employed in manufacturing and mining increased from a little below 6 millions in 1924 to a little over 6 millions in 1929, while the corresponding number for building, transportation, distribution, and services increased by 600,000. In Germany industrial employment according to the Institut für Konjunkturforschung increased from 1925 to the middle of 1929 by about 1½ million, or 5 per cent.[2] In this country census figures reflect the great increase that occurred during the war period in the number of wage earners employed by the manufacturing industries covered. This increase was practically wiped out between 1919 and 1921, but nine-tenths of the loss of those years was recovered from 1921 to 1923. The next two biennial periods showed a loss of about 470,000, the period from 1927 to 1929 a gain of about 360,000. Comparison via census pay-roll figures gives between 1919 and 1929 a loss of about 160,000, while by extending coverage the loss from 1923 to 1929 can be converted into a small gain.[3] Over the period there was thus substantial constancy

[1] No such statement can be made about Germany because of the—"stabilization"—peak in unemployment which occurred in the winter, 1923–1924. If we exclude it, then the "trend" will depend on our choice of a precise spot between that peak and the minimum of the summer 1925. From the minimum in 1927 to the end of 1929 the gradient of the "trend" would be strongly positive, but that does not mean much especially as it may be accounted for by circumstances not directly relevant to our present subject.

[2] Reduced to comparability, however, that figure would, the writer believes, dwindle to still more modest proportions.

[3] C. Goodrich and Associates, Migrations and Economic Opportunities, 1936, puts the increase from 1923 to 1929 at 185,000. Professor Mills, *op. cit.*, p. 480, stated that employment in all manufacturing industries increased at the rate of 0.6 per cent a year between 1922 and 1929. But this is as likely to be misunderstood as the statement that employment "declined" from 1923 to 1929 (see Aspects of Manufacturing Operations, *National Bureau Bulletin*, May 1935). Mr. D. Weintraub (Displacement of Workers by Increase in Efficiency and their Absorption by Industry, 1920–1931, *Journal of the American Statistical Association*, December 1932) found that no "permanent" displacement

partially reflected in the drastic fall in labor cost per unit of product in the manufacturing industries from 1921 on (see Mills, *op. cit.*, p. 413.) This does not prove, of course, that developments in manufacturing did nothing toward providing employment for the increasing population, because the sources of employment which took care of the increment in labor supply were directly and indirectly created by it. Nor does it prove that the unemployment of the period can be exclusively described in terms of the technological factor.[1] But it does prove that the latter actually did play the role which we attribute to it in our picture of Kondratieff downgrades.

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can be proved for the period 1920–1926, greater numbers having been absorbed "through" increase of output than were displaced "by" increase in "efficiency," while 1926–1929 only about 0.1 per cent of the workmen displaced failed to be absorbed, but that, of course, temporary displacement was considerable—about ¼ million per year. See, however, J. Lubin, Absorption of the Unemployed by American Industry, Brookings Institution, 1929. On the whole, those results do not seem to diverge from either our impression as to the facts or our interpretation. Much information that is, in spite of doubts on statistical and theoretical grounds, very valuable has been forthcoming of late as a result of a National Research Project of the WPA. See, in particular, D. Weintraub and H. L. Posner, Unemployment and Increasing Productivity, March 1937. We will mention only a few figures about the system as a whole, without attempting to appraise their precise significance. Taking 1920 for base, the authors give 146 as index of total physical national product for 1929, 126 as index of product per man-year, and 118 as index of total available (usable) labor supply. It would follow that during that period the system as a whole "absorbed" much more than the technological unemployment it "created," in fact, almost that unemployment plus the simultaneous increase in available supply of labor—a result in substantial accord with such other evidence as we have. Such statements are, however, open to a well-nigh innumerable host of objections, and certain obvious inferences cannot fail to rouse the ire of the more ardent critics and defenders of capitalism. The ones will object that for many workmen what looks statistically to be temporary loss of employment often is permanent, that reemployment is very often secured after delay spelling much hardship, that even when secured the new job may be transitory, less skilled, or otherwise less desirable, that the "services · · · are merely a buffer margin to enable the present system to frustrate its own genius in the interest of its creditors" (Mr. A. MacLeish, Machines and the Future, *The Nation*, Feb. 8, 1933), and so on. The others will point to the steady and considerable rise in total money and real pay rolls which is relevant to the question, not only *sub specie* of a "compensation" to the working class as a whole, but also because it does not necessarily follow that displacement would have been as widespread if wages had increased less (see below); to long-run tendencies such as are displayed by the net increase in jobs since 1900; to the arbitrariness of a standard which takes the superiority of alternatives for granted, and so on. Any social system stands a priori condemned by some and a priori justified by others. But there is not much room for disagreement about the facts.

[1] No unemployment ever can, except in the shortest of runs. When Professor J. M. Clark (Economics of Planning Public Works, National Planning Board, 1935) testified to his belief that "mere technological progress seems capable · · · of bringing on a state of chronic inability to use all our labor power," he wisely inserted "lacking the necessary adjustments." With this, to be sure, everybody will agree.

b. Next, turning to price levels in order to see how far the facts lend themselves to interpretation in the light of our model,[1] we must first qualify our expectation for Kondratieff downgrades by taking account of the influence of Juglar and Kitchin phases. Then we must bear in mind that price indices will understate the real decline, for the same reasons why quantity indices understate the real increase plus the additional one, that in some cases the prices actually paid are lower than the quotations which enter into the indices. Finally, we have to add the second great factor that made for decline, the reaction of the system to the war disturbance.

What we have before us is obviously the combined effect of both. Even in theory, let alone numerical operation, it would be extremely difficult, if not impossible, to divide it up between them. The two following sets of propositions are worth stating, however.

First, if the war disturbance had impinged on an otherwise stationary process and if no permanent change had occurred in the monetary sphere —the war being financed merely by straining an existing and unchanged monetary and credit apparatus—then prices would eventually, in the course of a process of repayment of government debts from taxation, have fallen to prewar levels. Any permanent expansion of the sphere of money and credit, especially if carried out by all countries in step, would *pro tanto* have removed this *mechanical* "deflationary" pressure. But this does not mean that, in the absence of it, no fall at all would have occurred, for the mere process of normalization in the business sphere, the cessation of war demand, the reopening of blocked channels of trade, the resumption of normal production and habits would have been sufficient to cause both a downward jerk and a permanent lowering of price levels from war peaks: the self-deflation of business cannot be prevented by mere abstention from "deflation," but only by continuing "inflation" by additional government expenditure.

Second, if there had been no war and if no autonomous change had occurred in the sphere of money and credit, then it follows from our model that by about 1925, when a neighborhood occurred for all three cycles, the price level should have been somewhat below that of the preceding three-cycle neighborhood, *viz.*, of 1897. From about 1911 the steady

[1] In a sense this may also be called an attempt to delineate, and to compare with the actual, the "natural" course of events. But, if we chose this mode of expression, we should have to recall once more our distinction between equilibrium influences and equilibrating influences. A priori there need not be more virtue in a "natural" economic process than there is in the natural course of tuberculosis. And all that we actually claim for the former is that it fills certain "physiological functions"—a turn of phrase which need not again be justified—and cannot in general be interfered with without producing as well as removing undesired results. In this respect there is, however, a great difference between the reaction of the system to the war disturbance and its reacting to our process.

pressure of "progress"—no need to explain this again—would have increased real incomes by enforcing a steady fall, which as we know should, in spite of so much permanent expansion of the monetary sphere as our process would of itself entail (see Chaps. IV, XI, and XII), have landed the price level at some figure below that of the neighborhood from which the current Kondratieff started. If it did not, this must have been due to the war disturbance and other factors of monetary expansion, such as the increase in gold stock since the nineties or the increase of lending facilities through banking legislation, both taking effect in successive prosperities. But autonomous change in the sphere of money and credit does not per se eliminate the systematic tendency of price level to fall in a Kondratieff downgrade. It only raises the level on which this tendency acts. Hence, if, say, devaluation had been resorted to in order to prevent the price fall of 1920 and if it had been successful in preventing it, the period would still have displayed that tendency and the phenomenon which for us is perfectly natural but for many economists a paradoxon, *viz.*, prosperity with falling prices. This fall we would expect to be interrupted, or temporarily turned into a small increase, around the beginning of the fourth Juglar, and then to resume at an accelerating rate as depression approached.

1. Inspecting the curve traced out by the price level in this country as represented by the B.L.S. index of wholesale prices (Chart XXXIX), we first of all notice the drop from the (monthly) maximum of 167.2 (1926 = 100) which occurred in May 1920, to a minimum of 91.4 in January 1922. This drop, or rather, if we allow for the fact that panic declines always outrun the goal and that hence some rebound would have occurred even in the absence of any other influence, a drop to a few points above that figure[1] was due not merely to normalizing reaction to war disturbance: we know that this reaction coincides with a Juglar depression. But that reaction was, it is safe to say, the dominant factor in it. We also know and shall definitely see presently that no appreciable "deflationary" pressure was exerted on the system. The huge machine for credit creation set up by the Federal Reserve Act as amended during the war period was left intact, and war expansion of the credit structure was supported and to some extent camouflaged by the broadening of its gold basis. As a postwar adjustment that drop was, hence, almost wholly due to the selfdeflation of business.

Now, that minimum of 91.4 was still about 30 per cent above the annual average of 1913, and it is quite possible that reaction to war

[1] This allowance is a difficult matter, for what it is reasonable to attribute to rebound from a trough exaggerated by the spiral, is mixed up with the effects of Kitchin movements and other influences and cannot simply be read off either from the maximum attained in March 1923 (104.5) or from the broader plateau of about 99 to which price level then relapsed.

inflation continued to play some role throughout the twenties. But owing to the circumstances just mentioned, this effect cannot have been significant. At least it is as safe to say that the rest of the period was dominated by other factors as it was to say that 1920 to 1922 was dominated by that reaction, and it is on this rest of the period that we have to try out our schema. Rebound from panic low plus the advent of Juglar recovery plus Kitchin effect may then be invoked in explanation of the rise in the B.L.S. all-commodity index to March 1923, which was mainly due to the class of semimanufactured commodities (128.3 in April 1923[1]). It was suspiciously strong and, in fact, gave way to relapse after the first quarter of 1923 (annual figure for the year—monthly average—100.6). During 1924 there was substantial stability at the lower level reached in the last three quarters of 1923 (annual figure, 98.1), in 1925 a rise (annual figure, 103.5) followed by a fall during 1926 (97.9 for December), tapering off in 1927, interrupted in 1928, resuming in the last quarter of that year, and gaining momentum in the last quarter of 1929 (December: 93.3). Finished commodities fell practically steadily from the maximum of 102.1 (November 1925).[2] The index of sensitive prices came down well in 1926, rose somewhat in 1927, sagged in 1928, and slumped in the last quarter of 1929. Comparison of the "domestic" price level with those of exports and imports[3] would greatly add to the details of the picture without altering its general contours. The National Industrial Conference Board's index of cost of living falls from nearly 200 per cent of its 1914 base (the middle of 1920) to a little above 160 (the middle of 1922), rises to the middle of 1925, and then falls slowly, not, however, reaching 160 before the middle of 1930.

This is what has been so frequently referred to as the stability of the American price level[4] during the twenties and taken as proof of the

[1] This fact, however, would accord well with the "rebound theory," since the prices in that class display the highest of the maxima in 1920 (253 in May) and the sharpest fall (90.3 in December 1921).

[2] If we eliminate farm products, the picture is from our standpoint greatly improved: we find steady fall from 1923 on at an average rate of 1.5 per cent per year, varying, however, nicely in the phases of the two shorter cycles (see Professor Mills, *op. cit.*, Fig. 61 on p. 341). The same applies to processed producers' goods and from 1925 to processed consumers' goods, but neither to raw producers' nor to raw consumers' goods (see *ibid.*, Fig. 68 on p. 359).

[3] See, for example, Professor Theodore J. Kreps, Export, Import and Domestic Prices in the United States, 1926–1930, *Quarterly Journal of Economics*, February 1932. One point is, of course, obvious, *viz.*, that export prices of manufactured goods were in general lower than the domestic prices of the same goods and behaved, in their short-run tendencies, more according to the competitive pattern.

[4] It must be remembered not only that it was the fashion to exaggerate such stability as there was but also that there was a time, bygone forever let us hope, when many economists believed that keeping the price level constant is all that is necessary in order to insure general stability of the economic system, to avoid depressions, etc.

success of federal reserve policy and/or of the absence of "inflation." We shall return to this later on. Meanwhile, it is submitted that the price behavior described does not fail to bear out our expectations. The Kitchins show well, the Juglar effect is not absent, and the Kondratieff pressure due to the long-term effects of "progress" is much in evidence. In the light of later events and considering the extent of the expansion in physical product and of the fall in real cost, an impression may dawn upon us to the effect that the slightly inclined plateau we behold—from 1922 to 1929 the rate was about ½ per cent a year—may perchance not have been all that we should have expected from the unhampered working of our model, especially when we weigh the interruption and partial reversal of the falling tendency from the summer of 1927 to the summer of 1929. And from this we might go on to infer that there was some factor which prevented prices from falling as much as they would have if left to themselves. But so long as the presence of such a factor is not proved, we have not more than an impression which may easily mislead.

2. The English case, fundamentally similar in other respects, differs from the American by the element of significant pressure exerted by the monetary factor, which was present in the former and not in the latter. And since under English conditions this pressure would primarily work through affecting imports and exports, devaluation of the pound in 1922, when the price level had had the opportunity of showing its true face, to 62.5 per cent of the prewar par, the figure roughly corresponding to that of the Board of Trade price index for that year, would *in this particular case*, as has been pointed out in Sec. *C*, have in fact removed a weight that not only depressed but also distorted. The Board of Trade index of wholesale prices displayed the postwar drop, falling from 325 per cent of the 1913 annual figure (April and May 1920) steadily through 1922 (December: 156). Then it rose no less steadily through 1923 and 1924 (maximum of 171 was reached in January 1925). That both drop and ascent lasted longer than in this country is not difficult to understand. But "overvaluation" of the pound must be invoked in explanation of the subsequent fall to 144 in April 1926. The disturbances of that year make it unsafe to speak of an effect of a Juglar prosperity being reflected in the modest rise to November (152), after which the English level, falling almost steadily to 136 for September 1929, conforms to expectation better than the American one.[1] The Ministry of Labour cost of living index (October 1920, 276 per cent of 1913; December 1929, 166) interrupted an otherwise steady downward course only in 1923–1924.

[1] But the extreme stability, at about 80 per cent of the 1924 level, of the Board of Trade's index exclusive of foods during 1927, 1928, and three quarters of 1929, somewhat militates against that statement.

3. The German case, finally, is almost completely dominated by factors extraneous to our process. The annual index of the Institut für Konjunkturforschung (1913 = 100) resumes in 1924, the first year after the gap caused by the war and by "wild" inflation, at 136. Prices of agrarian products were then at 112, sugar at 176, products from overseas at 125, and industrial materials at 146.[1] These figures obviously reflect past disturbance, both in their absolute values and in their relations to each other—the new prices in terms of gold marks being largely experimental—and the rise of the index in the next year and its drop to 128 for 1926 was but the result of adjustments which have little to do with normal cyclical movements. From the middle of 1926 to the middle of 1928 the general movement is upward and thus contrary to the English and American tendencies, though shorter fluctuations are fairly well in step. This may, in part, have been due to the influence of the prosperity phase of the fourth Juglar, but much more important was that of the "consumers' prosperity." The influx of the foreign credits that helped to finance both was not, of course, an additional factor but only implemented the two others. Since, however, the supply of those credits constituted an independent element of the situation, a surface explanation can alternatively be presented in terms of them. This will account both for the rise in prices in 1925 and for their trough in 1926, but it will not account for the tapering off in 1928 when beginning weakness of prices preceded the withdrawals of foreign funds. We may, moreover, note the heavy responsibility of building materials for the rise of the index in 1927 and 1928 and the insignificance of the contribution of nonferrous metals and of chemicals—facts which tend to reduce the extent of the abnormality. The cost-of-living index rose practically without interruption from the beginning of 1924 to March 1929, and thus presents the problem implied in behavior contrary to expectation still more clearly than the index of wholesale prices. But explanation by the agricultural policy and by the "consumers' prosperity" also becomes still more convincing when applied to cost of living.

c. The attempt to interpret experimentally, in the same way as price levels, the behavior of interest rates in the light of war disturbances and of our model is still more hazardous, because the influence of "policies" and of other external factors—open-market operations in the United States, the dominant role of government financing and of the management of the pound in England, all sorts of irregularities in Germany—may still more obviously than in the case of price levels seem to preclude all reasonable hope of finding traces of our process. This is a question of fact, however, and at the outset it is sufficient to answer

[1] Since practically no finished products enter into that index, we cannot trust it to render the real behavior of the price level faithfully.

doubts on that score by pointing out that policies and other external factors manage or influence money or credit not *in abstracto* but in given business situations which, barring the theory that they are nothing but the products of monetary policy, must assert themselves both in the measures taken and in their effects.

Expectation is for a fall, possibly interrupted by Juglar and Kitchin prosperities. This applies to both the war and the cyclical component. We shall, as in the case of price levels, attribute partly, though not wholly, the peak in 1920 as well as the fall in 1921—which in this country preceded open-market purchases and may, hence, be looked upon as "genuine," while the additional fall in the first half of 1922 raises another problem—to the war and its liquidation, and apply expectations from our model primarily to the rest of the period, although, especially for England and Germany, conditions traceable to the war continued to influence rates still more obviously than price levels. It should be observed at once that our theoretical expectation being what it is, a Hayek effect[1] of cheap money policies must be extremely difficult to discover and presumably cannot be discovered at all from the behavior of interest rates alone.

1. The strongest traces of what, from the standpoint of our model, would be normal behavior we shall, of course, expect to find in the United States. Although the advent of the Federal Reserve System materially changed the significance of the commercial paper rate,[2] we may still use it to represent the course of short rates, especially as acceptance, call, and time money rates would not give significantly different results. If we take our stand at the end of 1921, when it was at about 5 per cent and the postwar hump had been a little more than eliminated, we do in fact find the falling tendency we look for until the end of 1927 (see Chart XXXIX). The trough in the second half of 1924 strikes us as abnormally deep, but the increase in 1925 at the beginning of the fourth Juglar and the substantially level movement during the two following years are exactly what we would expect, especially if taken together with the fall that occurred in 1930. But between there is another hump: the rise in 1928 and to nearly the middle of 1929 is distinctly contrary to expectation and calls for an explaining factor, which we shall have no difficulty in discovering. An obvious clue is, however, afforded by the leadership in that movement of call rate. The Kitchins show well.

[1] By a Hayek effect we simply mean the effect on investment of a rate of interest lower than would have obtained had the process been left to itself. We are not discussing the applicability of Professor Von Hayek's theory in its strict acceptance, the assumptions of which do not seem to be fulfilled by postwar conditions.

[2] The behavior of commercial paper rate in fact differs from the prewar pattern. The seasonal movement, for instance, has all but disappeared.

Bond yields[1] illustrate our point still better (see Chart LII). From the end of 1921 to the first quarter of 1928 they (Moody's index of AAA bonds) declined by a little less than 1 per cent and this fall was, barring the recovery from the trough of 1922, almost without interruption. Their increase from the second quarter of 1928 to the third quarter of 1929 was but small and is easily accounted for by the abnormal behavior of short rates and by the speculative mania in general. Though the relation over the whole period between short rates and bond yields differs from their prewar relation, the latter thus still give the "trend" or general drift of the former. An impression to the contrary is created merely by the 1924 trough in short rates not reproduced in long rates and yields. Since the rise in 1928 and half of 1929 was also but very weakly reproduced in yields, formal trends drawn through money rates and yields from the middle of 1924 to the middle of 1929 would, of course, show divergent movements. But there is no justification for such a procedure.

It has been pointed out in Chap. XII that the rate on customers' loans is not in practice what it is in the theoretical blueprint, *viz.*, the core of the interest structure. In Germany, in particular, it followed mechanically the Reichsbank rate, and fixing it seems to have been almost a clerical job. But in this country it still retained something of that pivotal significance which our schema assigns to it. Therefore, it seems worth our while to glance at its variations (see Chart XLIV).

[1] Reference is again due to Mr. C. C. Abbott's important studies, *Review of Economic Statistics*, January and May 1935. It is a matter of regret to the present writer that this book had to go to press without the benefit it would have derived from the researches of Mr. F. R. Macaulay, Movements of Interest Rates, Bond Yields and Stock Prices in the United States since 1856, 1938. By familiar operations, which are very simple in the case of the United States but require "corrections" involving the exercise of much arbitrary judgment in the other two cases, a rough covariation between the short-run variations—mainly the Kitchins—in interest rate and in price level could be brought out graphically. We do not do this because all that matters for the purposes of this book is evident from inspection of the pulse charts. It will also be evident that even in the American case the relation is clearly a disturbed one—which must be so quite apart from *external* disturbances, since rates and levels are not the only elements of even the aggregative system—but it is fairly close from 1923 to 1927. If the opposite "underlying tendencies" are eliminated, rough covariation is still more obvious between interest and industrial output. In a paper previously quoted (*Journal of the American Statistical Association*, June 1931, p. 5) Mr. B. B. Smith compared the (smoothed) business index of the Cleveland Trust Company with the (smoothed) deviations of a short money index from bond yields (the latter taken as "normal," an idea which corresponds well with our view of the matter) lagged by one year, and found an acceptable inverse covariation between the two through 1928. A little reflection should convince the reader that, although we could not stand for a lag of exactly one year—but only for a shorter one—this result lends itself to interpretation by the Kitchin phases. It should be observed that it does not contradict the "Harvard lag" of short rates.

An average for 26 to 35 cities computed by the National Bureau of Economic Research (*Bulletin* for July 18, 1927) moved much like bond yield, though more sluggishly and at a level that was considerably—by about from ½ per cent to 1 per cent—higher. Only in New York City rates on customers' loans moved until the summer of 1927 at about the same level as bond yields, reflecting as they should the rise of the fourth Juglar better than these, but responding more strongly to the abnormal conditions that obtained from the middle of 1927 to the middle of 1929.

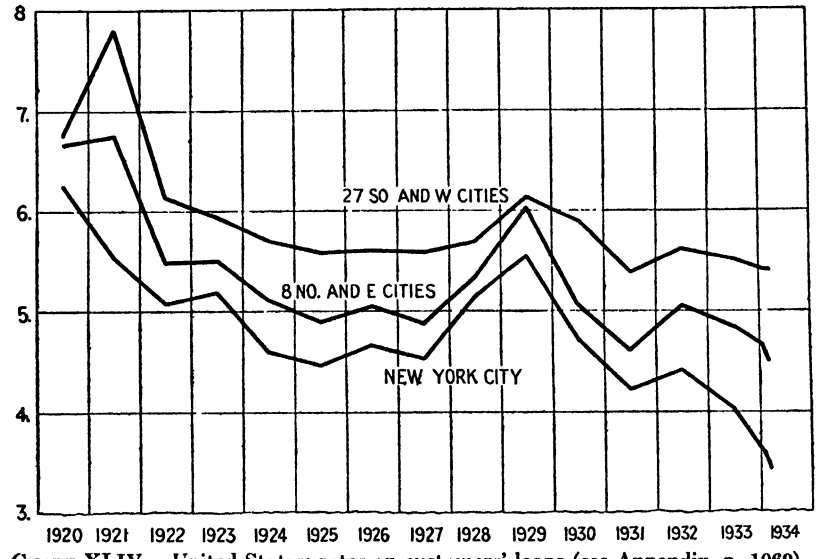


CHART XLIV.—United States; rates on customers' loans (see Appendix, p. 1069).

In the South and West and even in the North and East those rates throughout the period stayed at a figure much above Kondratieff expectation, and if it were not for the fact that other and much cheaper sources of money were readily available to all that was most "progressive" in the business organism of those years, we should be faced with the question, not of the presence of a Hayek effect, but, on the contrary, of the effects of dear money.[1] As it was, the high level of rates on customers' loans proves little more than the extreme imperfection of the money market in our sense.[2]

This imperfection and the abundance of other sources of funds also disrupts the close relation which according to our model should subsist between customers' rates and profit ratios in Professor Crum's sense.

[1] That question will be taken up in Sec. F, III.

[2] The National Bureau average of customers' rates fell at a rate of about 0.8 per cent per year from 1922 to 1929, while bond yields fell at a rate of 1.4 per cent. See F. C. Mills, *op. cit.*, p. 455.

Inspecting the curves traced out by the latter (Chart XLV), we find but unsatisfactory covariation with those rates. We shall understand that the trough in profit ratios that occurred in 1921 was accompanied by high loan rates; we shall not be surprised to observe the disruptive influence of the speculative mania at the end of the period; and we may also

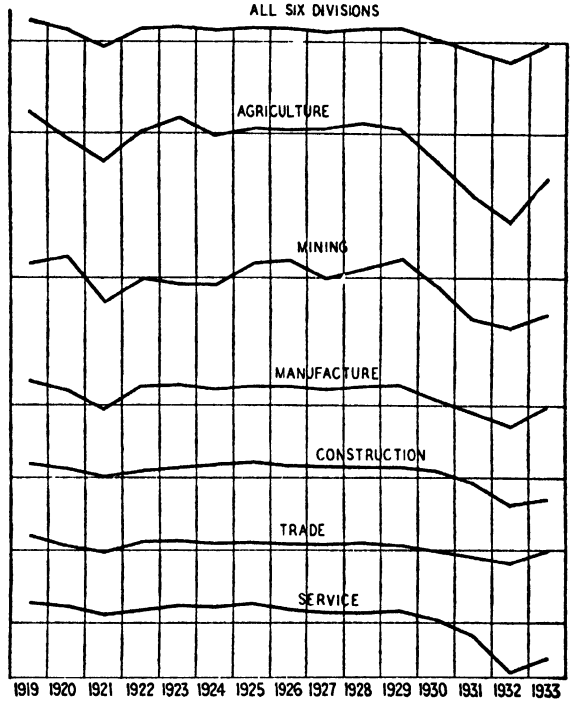


CHART XLV.—Profit ratios of United States corporations (see Appendix, p. 1069).

allow for lags. This, no doubt, improves matters, but the relation remains disappointingly weak.[1]

2. From the, comparatively speaking, normal course of interest rates in the United States the German case indeed differs, but not so much as one might think. Descent during 1924 from the impressive heights at the beginning of that year—day-to-day money, for example, was at 87.64 per cent for January—has, of course, nothing to do with our process and merely reflects reaction to the preceding death struggle of the speculation that was an element of the process of wild inflation. Similarly, the rise in 1929 only reflects the slipping away of foreign balances owing to the New York stock exchange boom and to a wave of foreign distrust. But if we connect (see Chart XL) the figures for the first quarter of

[1] The covariation of customers' rates with the ratio of net income to capital is more satisfactory, however.

1925 with the figures of the first quarter of 1929 or, still better, those for the last quarter of 1925 with those of the last quarter of 1930, we get a fall which may reasonably be attributed to our tendency. The fluctuations within it, *i.e.*, mainly the rise during 1927 and the reaction to it, also bear interpretation by the cyclical process. While it cannot be urged against this interpretation that the fall in 1926 was simply a lagged effect of previous inflows of foreign funds and the rise in 1927 a lagged effect of the temporary cessation of those inflows in 1926—because those inflows were not independent of the German business situations—it seems permissible to point to the importance of this method of financing domestic business in explanation of certain obvious irregularities in timing. Of course, the general level around which rates fluctuated, though displaying a downward inclination, was abnormally high throughout: 6 per cent gold mortgage bonds (roughly though not perfectly comparable to American triple A bonds), which were around 50 per cent of par in 1924, were still but 98.95 in February 1927, when they began to fall again, under the pressure of foreign sales and of the strain of the consumers' prosperity. But this is easily accounted for by the wastages and dissavings of the war and the period of inflation and by the fiscal policy pursued.

3. In the English curve (Chart XLI; for call rate and the rate on loans at short notice to the stock exchange see Chart LIV) Kitchins show well, and there is no reason for not attributing the rise in 1925 partly to the Juglar phase then prevailing. But a trace of the Kondratieff tendency is, at best, only visible from the end of 1925 to the end of 1928. The peak of 1920 and the trough of 1922 are again easily understandable on short-run considerations—cyclical ones among them—but neither of them can be taken as a starting point. On the other end, the sharp rise in 1929 is also easy to understand considering the sensitiveness of a fundamentally untenable currency situation. We should add, however, that as shown by the behavior of the rate on stock exchange loans, domestic speculation was also an important factor. But even if we cut off the postwar hump and thereupon connect the figure for the first quarter of 1922 with the figure for the first quarter of 1928, we get, in contrast to the American case, a rising instead of a falling "trend," and even the trough of 1930 is still above that of 1922. This is of course due to the policy adopted by the Bank in protecting the pound after it had climbed up to par, and *pro tanto* reveals the presence of a disturbance of the normal course of events as important as, though, of course, not more so than, anything that affects money rates can be. Not until depreciation removed the shackles was interest free to move according to its own law.

The high general level of interest rates is, however, not wholly due to that but also to causes similar to those which were operative in the

German case. The index of yields on four fixed interest securities[1] fell from its peak (November 1920: 163; 1913 = 100) to a trough in June 1923. Even at this trough (117) it was perhaps something like 30 points above what it could possibly have been without the war *and postwar policies.* Variations as distinguished from general level are nevertheless not so far from expectation also in this case. We should have expected a rise after that trough, owing to the influence of Juglar phases. We find it, and although it set in earlier and went farther than we might have expected—the peak which occurred in September 1926 was 139—and although other factors were probably more important in bringing it about, there is again no reason for not attributing it in part to the Juglar recovery and especially to the Juglar prosperity. The slow fall to January 1929 (122) also is what we should expect in a Juglar recession.

The differences in the behavior of interest rates in our three countries are not more obvious than the parallelisms between them. They were enforced through the mechanism of short balances, which for a time functioned not less but more promptly than before the war. This can be seen from the fact that, respectively, from April 1925 and August 1926 until 1930, the Berlin prices of sterling and dollars display very close inverse associations with the differences between the Berlin and the London and New York market rates.[2] These facts acquire for us additional significance in the light of the other fact that English, German, and American cyclical phases were substantially, though not perfectly, in step.[3]

II. *a.* For an idea about the behavior of American system expenditure during the postwar period, we rely on the Federal Reserve Board's series of debits to individual accounts in 141 cities outside of New York City. It includes several items which should for our purpose be excluded and is otherwise not quite what we want. In particular, it is neither free from the influence of speculative transactions nor strictly comparable with the series with which we are, nevertheless, about to relate it.[4] But still we may put our trust in it with a lighter heart than in the clearing figures previously used (see Chart XLVI).

The first thing that strikes us is the weakness of the "normalizing reaction" to the war disturbance. In fact, there is hardly any. The annual figure for 1921 is about 25 per cent below the obviously abnormal

[1] See *International Abstract of Economic Statistics,* Conference of Economic Services (London, 1934) or *Special Memorandum* 33 of the London and Cambridge Economic Service.

[2] See H. Neisser, *op. cit.,* (*Weltwirtschaftliches Archiv,* 1929). Before August 1926 that was not so in the case of the dollar, because the Reichsbank rigidly held it at 4.20.

[3] Bank rates and other points will come up for discussion later on; see below, sub III.

[4] This is obvious in the case of the national income, but it should be emphasized that it is also true of the deposit series.

one for 1920, but this fall, unlike that in price level or interest rates, did little more than eliminate the effect of the postwar boom and the 1919 figure was surpassed already in 1923. No other series shows with equal force the absence of any significant postwar "deflation" or the fact that the credit apparatus was by the war expanded for good, which

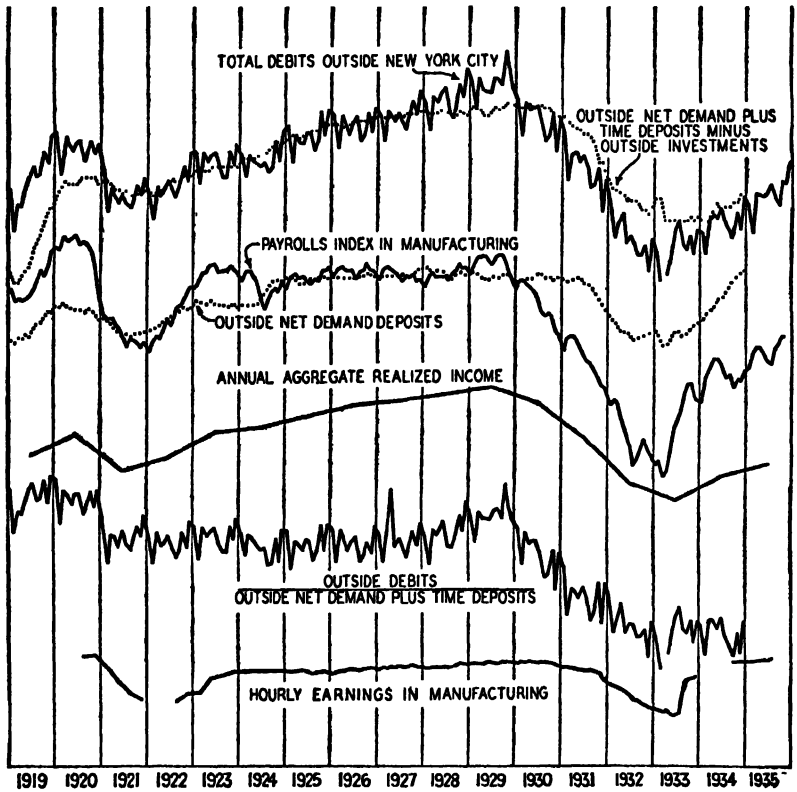


CHART XLVI.—United States (see Appendix, p. 1069).

stands out particularly impressively if we compare with it the behavior of the English series of country plus provincial clearings (see Chart LI). If, then, we accept this as a datum, the rest, *viz.*, an ascent from a monthly average of 16.6 billions in 1922 to a monthly average of 27.7 billions in 1929, substantially steeper than that of outside bank clearings from 1900 to 1913, also testifies to the unexhausted powers of that apparatus, though a more modest rate of increase would have been expected by us. A straight-line descriptive trend would tolerably fit the logs of the figures. The Kitchins show well and the rise of the fourth Juglar (1925) is indicated by what but for 1928 and 1929[1] would look like a new level.

[1] The figures of these years are of course the ones most influenced by speculative transactions.

Our chart uses the Copeland-Crum figures for realized minus imputed national income (see Appendix), but no difference would be made in our rough conclusions if those of Professor Kuznets (*op. cit.*, p. 8, Col. 3 of Table I) had been used. This series also testifies to the permanence of the monetary revolution that had occurred but it presents a reduced and, since this is primarily due to the exclusion from it of capital gains, a truer picture of it.[1] The postwar boom which affected the figures for 1919 and 1920—the latter, 69 billions, was about 12 per cent above the former—left national income for 1921 at exactly the level of 1918 (57.4). Then follows an unbroken ascent, from 61.2 billions in 1922 to 87.6 in 1929. The short-run behavior corresponds—account being taken of the statistical differences between the two series—to that of debits and would do so still more if undivided profits were included.

It might seem that the pay-roll index charted displays a still more moderate increase and thus raises an additional question. But on closer inspection it will be seen that this is not so. Both national income and (factory) pay rolls fell 1920–1921 more strongly than they rose in 1919–1920 (unlike debits). The percentage rise and fall were both more pronounced in the latter than in the former case. But in 1922 pay rolls also recovered at a much greater rate than did national income, so much so that not merely the dip in 1924, which occurs only in the pay-rolls index, but also its behavior for the rest of the time explains itself naturally in the light of a reaction to that increase: surveying as a whole the stretch between (for pay rolls: middle of) 1921 and (for pay rolls: third quarter of) 1929, we find substantial parallelism. Nevertheless, there possibly was, apart from the influence of that difference in time shape and from year-to-year variations,[2] also a significant change in the longer run relation between pay rolls and income which reveals itself in a comparison made by Professor Copeland of pay rolls in banking and in nonfarm

[1] In the long run, or by its "underlying tendency" or its trend values, national income in terms of current units of currency may be said to measure that component of prices and values which is, at least immediately, attributable to monetary causes, see Chaps. VIII and X.

[2] Professor M. A. Copeland, National Wealth and Income, *Journal of the American Statistical Association* for June 1935, pp. 385–386, notices that the ratio of pay roll to realized income and the proportion of total income received by the poorest 90 per cent of the nonfarm population (but gross farm income moved much as income of industrial workers, see M. Ezekiel, *op. cit.*, chart on p. 140) show similar increments and adds that from 1918 to 1929 the latter rises and falls with the ups and downs of business. This is so, but it must be entirely due, first, to the inclusion of the abnormal year 1919, second, to the abnormally strong increase in wages in 1923, and, third, to the exclusion of undivided or unwithdrawn profits. Hence, the writer cannot follow Professor Copeland in considering that finding relevant to "the Hobsonian view [now unfortunately sponsored by, among lesser lights, Dr. Ezekiel, J. A. S.] that increased concentration in periods of prosperity is responsible for a disproportionate volume of saved income," however much he rejoices on

industry with the comparable part of total realized income.[1] This relation was, at about 73 per cent, in the long run fairly stable before the war. We should expect and actually find that war expenditure disturbed, *i.e.*, at first, decreased it—we remember that adventitious, in contrast to entrepreneurial, demand always tends to do that. But reaction against this is observable in 1917, and the improvement in the bargaining position of labor, the labor policies of the various war boards and the conditions of the postwar boom carried it much beyond that prewar level to, if we may trust the figures, about 84 per cent. Some decline, though owing to the change in Kondratieff phase not necessarily to prewar levels, was due within the process of general normalization and may in fact be seen in those figures, although the ratio remained much above prewar normal in 1929 (77.9). To this and cognate subjects we shall return below.

b. Corporate accumulations are, as stated above, not included in the income figures discussed.[2] We may use their variations as indicators of the variations in all accumulations.[3] In doing so we must of course bear in mind that, as presented in the official Statistics of Income,

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general grounds in Professor Copeland's refusal to support the implications of that unsound doctrine. But the theorem that during recession aggregate profits converge toward zero and during depression tend to become negative is not so very far removed from reality.

[1] Professor Copeland's series and the argument that follows in the text involve the use of two different and imperfectly comparable series, Professor King's from 1909 to 1920 and Professor Copeland's own from 1920 to 1929. If we went on, a third, Professor Kuznets', would have to be used.

[2] That is to say, they have not been added. But as far as they are not used for the purpose of increasing cash items (and as far as they really exist), they of course eventually reappear in individual incomes, although some authors argue as if they were stored up.

[3] No estimate will be offered of household savings but only certain indications, because we simply do not know enough about them, particularly as regards the roughly 39,000 (1929) individual net incomes above $50,000. The most ambitious attempt that has been made (Levin, Moulton, and Warburton, America's Capacity to Consume, 1934, followed by two interpretative volumes by H. G. Moulton, Formation of Capital, 1935, and Income and Economic Progress, 1935) has, statistically and theoretically, been so severely criticized that it is unnecessary to explain why we do not avail ourselves of the results. In particular, the author has little, if anything, to add to Mr. H. H. Villard's article on Dr. Moulton's Estimates of Saving and Investment, *American Economic Review* for September 1937, which completely disposes of the contention that there was any excess of net monetary savings over net productive investment, and thus of one type of oversaving theories as applied to the postwar period. Concerning another type, it is relevant to note that, as one of the co-authors of the first of the volumes mentioned, Mr. C. Warburton, has pointed out (Capacity to Consume, p. 111, and again in Trend of Savings, 1900–1929, *Journal of Political Economy*, 1935, p. 84 *et seq.*), there was no significant "trend" in the percentage of savings for the whole period 1917 to 1929, even in the data of the Brookings investigation, if it were admissible to speak of trends in the case of a series extending over 13 years. There would be a downward one, or, for 1922 to 1929, a very slightly rising one, if, as we must,

they—net incomes minus cash dividends paid to the individuals—are in some cases the product of arbitrary decisions and in others of irrational bookkeeping routine. Obsolescence in particular can hardly ever be adequately taken account of either by the executives with whom those decisions rest or by the observer. Moreover, the undistributed part of net income not only fills the function of accumulation in our sense but also that of an equalization fund, so that they really ought to be referred not to a year but to, say, a Juglar. Finally, the figures must be corrected for the substantial difference that exists between the usual depreciation at cost and the appropriate depreciation at current prices. This has been done by Mr. S. Fabricant, whose corrected series for all corporations except tax-exempt and life insurance companies we are going to use.[1] The 1919 boom carried them to a peak that was never reached again—$3,310 millions, a figure which illustrates the equalization function of undivided surplus. Whether or not corporate business intended to prepare itself to meet the difficulties that were to come by accumulating that "reserve," the latter was actually almost wiped out in 1920 (−$10 millions) and 1921 (−$3,240 millions). Starting with a practically clean slate in 1922, we have, for that and the two following years, which about completed the Juglar recovery, a total of $4,090 millions. The next 3 years, roughly covering the prosperity phase of the fourth Juglar, added $4,760 millions, over half of them in 1925. This accords well with expectation. But the contribution of 1928, $2,040 millions and, though less so, that of 1929, $970 millions, are above expectation[2] and must be included in our growing list of abnormalities which showed during those

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we exclude capital gains. (See Chart II on p. 101, inference from which involves, however, the hypothesis that the percentage of national income saved is roughly equal to the percentage of income derived from property.) "With capital gains excluded, this percentage [of savings] was lower throughout the decade 1920–1929 than during the prewar years 1909–1914" (p. 100). This is in itself sufficient to destroy the case for either an oversaving or an overinvestment inference from this material. We may take the opportunity to refer to Mr. W. H. Lough's critique of the Brookings estimates of household savings in his most helpful book on High-level Consumption, 1935 (Appendix G) and to add that his own estimates (see below), although owing to the use of a different concept of saving and for other reasons, far above what savings—which, be it recalled, exclude among other things sums assembled for residential construction for owner occupancy—in our sense can have amounted to, yet fail to display an upward trend for 1919 to 1929 (though they of course increase from 1922 to 1928) and that their percentage share in his grand totals of realized income displays a falling one.

[1] Measures of Capital Consumption, 1919 to 1933, National Bureau of Economic Research, *Bulletin* 60, for June 30, 1936, p. 12. The limitations of the material and the difficulties of handling it are fully discussed in that study, to which the reader is hereby referred.

[2] They are, however, in accord with the Kitchin phases, which in this series show very well throughout. The dips of 1924 and 1927 are strongly marked.

two years. This makes, for the eight years, $1,485 millions per year or, for the eleven years, $1,084 millions.

There is no point in stressing either figure, because neither 1922 to 1929 nor 1919 to 1929 forms any unit that has any cyclical meaning. But there is point in stressing their comparative smallness: the first must, moreover, be judged in the light of the fact that the span to which it applies does not contain the Juglar depression, which in this case, as we shall see, more than wiped out the total. Although we cannot in so short a series speak of a trend in our sense—a result trend—but only of Juglar and Kitchin fluctuations, it is worth while also to note that a formal trend through 1922 to 1928 would not display a significant inclination.[1] And, if, from the standpoint of oversaving theories, the figure of 1928 were fastened upon in connection with an explanation of subsequent vicissitudes, we should ask in reply whether a figure only about half a billion above the average could, even from that standpoint, be looked upon as adequate, and why the still higher figure of 1925 did not prevent a perfectly normal Juglar prosperity and a supernormally active Juglar recession. The order of magnitude of the total precludes any retreat on cumulative effects. It was not even enough to prevent a substantial increase in long-term debt, in spite of the booming stock markets.

Comparing the course of corporate accumulations which has been just described with the evidence embodied in Chart XLIII, we see what has often been observed, *viz.*, that there is fair correspondence—though opinions may differ about the nature and average amount of the lag—between the variations in those accumulations and in the production of durable goods, as there also is, let us add, between the former and expenditure on plant and equipment. This is of course as it should be, but the inference that might be drawn is much weakened by the fact that covariation with total production of manufacturing industry is just about equally good and covariation with consumers' goods' production almost so. The three—and many other—quantities simply move together within one process, as, to use Professor Leontief's happy phrase, soldiers do in a marching battalion, and there is little justification for picking out the relation between any two of them and still less for interpreting it causally.[2]

[1] Cash dividends also display the Juglar and Kitchin phases, but only slightly: they increase from the last quarter of 1921 to the end of 1929 in an almost straight-line manner. They were greater by about 3.1 billions in 1929 than in 1922, thus absorbing most of the net increase in the net revenue, exclusive of taxes, over the period. *Corporate accumulation failed to keep step with corporate distribution.* The implications of this must, no doubt, be qualified by taking account of the household savings of shareholders. But what we know about them does not invalidate the obvious conclusion, *viz.*, that, so far as this source of income goes, the percentage "saved" decreased as the income itself increased.

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c. It is of some interest finally to try to form an idea, although it can only be a very imperfect one, about the relation between total realized income (which excludes corporate accumulations) and consumers' expenditure, which will also shed some light on the order of magnitude of, and on the variations in, net savings of all households combined. An indication is afforded by the fact that the percentage change in department-store sales was from about the middle of 1923 to the first months of 1929 practically equal to the percentage change in nonagricultural income.[1] Department-store sales rose more and fell less than nonagricultural income in 1920 and 1921, but then the indices of both (1928–1929 = 100) got and kept together until the second quarter of 1929—after which they fell so closely in step that the curves in 1932 practically coincide—when nonagricultural income rose slightly more than sales. There is no systematic tendency for variations in sales to lag behind or to become relatively smaller as aggregate income increases. The suggestion implied is substantially confirmed, if due account be taken of consumers' outlay on those durable goods for which department-store sales are not typical—the main instances being outlay on passenger cars, which is, and acquisition of homes, which is not, as a rule included in the estimates of consumers' expenditure. This is done by the figures compiled by Lough, King, Kuznets, and Warburton.[2] Moreover, those figures indicate, although the fact is veiled by differences in definitions and classifications, not only that the absolute values of aggregate realized income and aggregate expenditure on consumers' goods displayed no

been turned around by some theorists of consumers' credit so as to read that stimulation of consumption will stimulate investment and even "saving" and is, in fact, the life-giver of the economic process. There is as much truth as there is error in any such statements, the very inadequacies of which then produce "discoveries" that are pregnant with policies.

[1] This finding is due to Dr. Louis Bean. See Nonagricultural Income as a Measure of Domestic Demand, by Bean, Bollinger, and Wells, U. S. Department of Agriculture, Agricultural Adjustment Administration, Agricultural Industrial Relations Section, June 1937, p. 8. The index of nonagricultural income is not strictly comparable with our realized income but the contours are the same.

[2] W. H. Lough, *op. cit.*, p. 26, chart on p. 27 (Total Outgo, roughly equal to his realized income, which includes imputed rentals, to be compared with "commodities" plus "intangibles"); W. J. King, National Income and Its Purchasing Power, 1930; S. Kuznets, National Income (1938), Table 15, p. 53: consumers' outlay (in his sense) fluctuates 1921 to 1929 around 88 per cent, the last year displaying the *larg st* percentage (90.7), and after rearrangement to fit our concepts around 95 per cent of *his* national income. C. Warburton, How the National Income was Spent, 1919–1929 (*Journal of the American Statistical Association*, March 1935, Papers and Proceedings of the 96th meeting, p. 177, incomparable with the other estimates as they are between each other) obtains for consumption in per cent of *his* national product a figure varying between 79.8 (1919) and 102.6 (1921). Since 1925 shows 85, this is the only series in which the percentage is markedly higher in depression and recession than in prosperity.

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tendency to drift apart, as some theories postulate they should, but also that they did not differ so very much from each other.[1]

The reader will be inclined to attribute these results to statistical miscarriages and wonder how either of them can be true, considering, on the one hand, that we know from common experience that households do save[2]—and, so we are taught, out of increasing incomes more than out of decreasing ones—and on the other hand, that rearrangements in the timing of consumers' expenditure—such as is involved in a shift of

[1] Mr. Lough (*op. cit.*, see in particular the basic tabulation in Appendix A and p. 306) arrives, it is true, for 1919 to 1929 at a total of "saving from realized income" which is not far short of 100 billions. Relatively minor points apart, this is, of course, due to his treatment of increases in cash holdings, of all life insurance premiums and of payments for the acquisition of real estate, and if the total is scaled down to fit our concepts, the difference between income and expenditure reduces to a quantity of the order of magnitude of about 5 per cent of the former. We may illustrate the point also by a rearrangement of Mr. Warburton's figures, *op. cit.*, p. 178. If we deduct from his totals for consumers' goods and services the item of imputed rentals and if we add to them the item of residential construction (not all of it ought to be added, of course, but, on the other hand, we neglect other items which should) we find that the result comes fairly close to the Copeland-Crum revised series of realized income. The differences (income — consumers outlay) then are in billions: for 1919, 1.8; for 1921, minus 3.4; for 1923, minus 1.8; for 1925, minus 4; for 1927, 0.8; for 1929, 3.2. This may read absurd (especially the minus figures do) but is not in the least. That realized income should fall short of consumers' expenditure is not at all unlikely in a period in which everyone rushed into debt and, incidentally, impugned over-saving. And there is (though plenty of roughness) no statistical mistake in the comparison of two substantially independent and comparable aggregates, nor does it follow *ipso facto* (this would mean begging the question) that the Copeland-Crum estimates are too low. No inference can, of course, be drawn from the detail of the behavior of those differences. They do show, however, that in the present state of our information presence or absence of net savings is a matter of margins of error and this illustrates the point we wish to make quite sufficiently. Into the shifts, so interesting from many standpoints, which we observe between different classes of consumers' expenditure, we cannot and need not go. The one that is relevant to our purpose, the shift toward durables, has been mentioned and is in any case obvious.

[2] But since earmarkings for the rainy day and for the acquisition of durable goods, homes included, and nonspending of capital gains all do not come within our concept of savings—the writer trusts that the reader remembers the reasons we have for this—the fact is, for the period under discussion, not quite so palpable as it seems. The first two items will cover much of what is usually considered as the savings of the lower and middle income groups; the third will cover much of the so-called savings of the middle and higher groups. We are speaking of this country and a period of an all pervading speculative attitude and of uncritical optimism. The successful lawyer, doctor, and business executive, all speculated on the stock exchange and, as long as things went well, were, say, up to an income of $50,000 exclusive of such gains, under great temptation to look upon their current earnings as a fund for current expenditure. This may have been different in the case of seasoned property incomes of the larger and largest sizes. In 1929 there were 513 individual income tax returns stating incomes of a million and over, but only 75 in 1924. If we look upon the latter incomes as the "seasoned" ones—assuming that recipients of war profits had also been sobered by that time—we may guess that the prevalent idea

consumers' demand toward more durable goods—underspending in deep depression, increasing replacement of saving by insurance, and direct taxes paid out of incomes[1] must all of them create, if not savings or not savings in our sense, at least discrepancies between our aggregates, and raise the figures of realized income—increasingly even—above those of consumers' expenditure. The answer is simple, however. All those items were to a large extent compensated by dissaving (mainly the spending of capital gains) and borrowing, the latter including some that professed to be for business purposes. There obviously were in all strata of society very many people who "lived above their means,"[2] as is shown by the ready response to any boom or slump, particularly in stock markets, of the sales of industries catering for "luxury" demand.[3] We thus return with added emphasis to the opinion already submitted for the prewar time in an earlier chapter, *viz.*, that the amount of net households' savings, as distinguished from firms' accumulation, is being greatly exaggerated even by the more sober ones of the current estimates. In support, we may point again to the evidence there is—as, to a lesser extent, there was for the prewar time—for households' straining their resources in order to expand their consumption.

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about the size of rich men's genuine savings applies fairly well to these, although some households known to be in that category spent pretty freely on their own consumption, —the higher the income, the less its relative purchasing power as compared with Europe— and others on other people's. But those ideas hardly apply to the rest. The drift of the argument would, of course, not be affected if we had chosen a lower than the million limit.

[1] Of underspending there is some evidence for 1921. But otherwise there was no year of deep depression and, hence, there cannot have been significant underspending. Rearrangements of the time shape of expenditure were mostly effected by borrowing, but they must have had some influence in causing temporary withholdings. The earmarking of sums for payments of life insurance premiums is, of course, saving in some, but not in other, cases. State and Federal taxes are (except for 1919) more than balanced by the "public consumers' goods," public buildings, highways, and streets.

[2] That turn of phrase applies strictly to part only of the cases we refer to and becomes misleading beyond it. Nobody, for example, thought he was living above means, still less that he was dissaving, if he bought himself a home from realized appreciation of stocks.

[3] This is true for the "luxuries" of *all* income brackets, of course. It is, however, not less but more true for those of the higher ones. It was not the third-class but the first-class hotels, for example, which were overcrowded in 1929 and in which a visitor had a whole floor to himself in 1931 to 1933. Even obviously temporary gains are readily spent and play a large role in the financing of the consumption precisely of the higher income levels. That the lower and lower middle classes spent a larger percentage of their income on consumption than before the war may perhaps be inferred from the expansion in the production of their luxury goods and is in itself plausible, owing to the growth of social insurance and to an unmistakable change in attitude. But the former may also be due to a shift in taste and such indications as we have are hardly trustworthy. See, for example, Mr. Warburton's argument in favor of this view, Trend of Saving, p. 97. Nothing can be concluded from figures such as are there presented without committing a contempt of court in matters of statistical principle.

According to Mr. Lough, short-term consumers' debts increased by about 4 billions from 1919 to 1929.[1] This includes loans against life insurance policies and federal loans to veterans as well as installment paper, open accounts, overdue items, loans by loan agencies, pawnbrokers, personal loans by commercial banks, but not loans against building and loan shares or home mortgage loans. Very much higher estimates have been published,[2] but the one quoted suffices to indicate a tendency which becomes still more significant by virtue of the fact that it is the years of rapidly rising incomes which display the largest increases: 1923 (776 millions: maximum increase), 1928 (609), and 1929 (691). The most obvious single symptom is the growth of buying on installments, which spread from motorcars and the new household goods—refrigerators and so on—to clothing and, while it was spreading, involved anticipation of future income. Exact figures exist only for individual industries. For the total we have estimates which vary widely: the first that was based on a careful investigation—that of M. V. Ayres—was 5.7 billions for 1925. It has been criticized, and reduced to 4.875 by Professor Seligman, still more so by later writers.[3] We know, however,[4] that in 1927, 23,779 retail stores whose total sales were over 4.7 billions and which included a number of "cash and carry" establishments, sold 9.2 per cent of the total on installments, 32.2 per cent on open credit arrangements, and only 58.6 per cent for cash. Motorcar dealers sold nearly 50 per cent, or according to another estimate 58[5] per cent on installment; furniture dealers, 57.7; and in the lumber and building materials trade open credit was given for 90 per cent of the sales.

The role of both borrowings and dissavings in the processes of the twenties and their relation to the subsequent breakdown is obvious. But considering the prevalence of the view that consumers displayed want of alacrity in responding to increase in monetary incomes or, for that matter, in business revenue and that this was a source of troubles,

[1] See *op. cit.*, p. 312. The increase is from 5.4 billions to 9.4, part of it being, of course, due to carrying charges.

[2] The highest that has come to the notice of the writer is that of F. W. Ryan (Internal Debts of the United States) which for 1929 is 22 billions.

[3] These figures refer to total volume of installment sales, not to installment paper outstanding. Every series of estimates the writer has seen displays a rising "trend" from 1919 to 1929, Mr. Lough's to about double. The significance of this must not be exaggerated. A new method of paying for durable goods was simply gaining ground. But while it expanded, it meant buying beyond the funds available from consumers' income streams, and this is enough for us. No need to say that bulges occur in the relatively prosperous years in which people should, according to prevailing theories, be busily saving.

[4] National Retail Credit Survey, Part III, 1930, Department of Commerce.

[5] C. C. Hanch, Composite Experience of Automobile Finance Companies, 1927. It had, according to the same source, been 75.5 in 1925. The rapid growth of consumers' finance companies is in itself a significant fact.

the facts glanced at, fragmentary as they are, have an importance in themselves, irrespective of all theory. Though we do not hold, of course, that any dire consequences would have followed from a higher amount or from an increasing percentage rate of savings, we may still note that oversaving theories would not apply, even if they were logically unexceptionable.

d. In Germany, the estimate of national income which holds the field is that of the federal statistical office (Reichsamt).[1] Since the first figure is for 1925 (59 billion marks), we have five in all. There was strong increase to 1928 (73.4)—and a small one to 1929 (73.6)—which would be somewhat accentuated by the addition of reparation payments which have been excluded. The national wage bill (which includes all salaries and is hence affected by the increase, relative as well as absolute, of salaried employees of all ranks) also increased steadily from 33.7 billions to 42.6 in 1928 (and 43 in 1929) hence by about 2 per cent more than national income or (if that increasing weight of salaries be taken into account) roughly as the latter.[2] This too is perfectly normal, although the movements from year to year reveal various abnormalities, the most important of which is that the increase in wage bill from 1927 to 1928 was, in absolute amount, almost equal to the increase in national income. In spite of this, however, that wage bill was even for 1928 not more than 58 per cent of national income,[3] which considering the comprehensiveness of the former is anything but high.

In comparing the national income with consumers' expenditure we strike the same phenomenon, only still more obviously, which we observed in the American case. That figure of national income includes corporate accumulation. A careful estimate of consumers' outlay,[4] which excludes

[1] Monograph (*Einzelschrift*), No. 14. Estimates of national income at one time threatened to become a political affair, and it was possible to infer from the figures compilers presented whether they were siding with trade unions or opposed to their policies. The one we use seems to be entitled to confidence. Its main bases are income-tax and wage-tax statistics. Double counting is carefully guarded against. This does not mean, however, that it is strictly comparable to the American series though variations presumably are.

[2] The figures for wages are not quite safe. The wage tax with its many exemptions and rebates proves on investigation a less valuable ally than one would think. Comparison with the prewar time when it did not exist is too hazardous a venture to undertake, since the figure of wage income for 1913 is highly conjectural. This also casts doubts on the precise significance of the sharp increase from 1924 to 1925 (about 40 per cent in the industrial pay roll).

[3] It is, however, important to bear in mind that the income of wage and salary receivers was considerably increased by "social rents" and pensions which are not included in the wage bill and in 1928 amounted to 11.2 per cent of the national income, a largely though not wholly additive item.

[4] Walther Lederer, Was verbrauchen wir? in *Die Arbeit*, 1932.

residential construction for owner occupancy,[1] nevertheless comes close to it. The differences (income minus outlay, in billions of marks) for 1925 to 1928 are: 1.3, 1.4, 1.9, 1.7. If taxes paid out of incomes are taken into account there is a negative figure for every year. This accords with an investigation of the Institut für Konjunkturforschung.[2] Now, of course, it will be held—it has been held, as a matter of fact—that this proves only that the income figures are too low. They may be. But this cannot be inferred from that fact alone, which it is erroneous to consider as logically impossible or wildly unlikely. It is perfectly possible and fits excellently into the general picture of the situation. People simply borrowed—again in many cases ostensibly for productive purposes—and dissaved.

For the United Kingdom we use Mr. Colin Clark's income estimates for 1924 to 1929.[3] We start (in billions of pounds) with 3.36, then have the Juglar jump we expect in 1925 (3.7), an understandable drop in 1926 (3.53), which was roughly made up for in 1927 (3.67) and 1928 (3.64), and end up with some reflex of the 1929 spurt (3.73). The British income-tax system had (up to 1927–1928, see note below) a smoothing effect, but considering this, fluctuations show as they should. There is also a trace of the rising tendency we expect. But the whole is a very sober affair and characteristically different—so much is clear, in spite of the lack of comparability of series—from either the American or the German case. The monetary revolution shows, of course, by comparison with the last prewar years. But no machine for monetary expansion had been set up, as it had in this country, which would, after liquidation of the war, go on by its own momentum. Pressure on the aggregate income by the monetary factor is, on the contrary, obvious—the presence of a component that worked toward continuity with prewar levels. This would in itself suffice to justify the "prediction" that the subsequent great depression should be comparatively mild and short.

[1] Both series include imputed rentals.

[2] *Vierteljahrshefte zur Konjunkturforschung*, vol. V, No. 4. Mr. Lederer raises various objections to the result, which is a deficit for each of the 4 years. These objections seem justified in part. But he only succeeds in turning the deficits into on the average minute surpluses.

[3] See National Income and Outlay, 1937, p. 88. This, of course, implies that we accept still another concept. Mr. Clark's most important nostrum, however, the addition to national income of public revenue from indirect taxation, rates, and so on, we will excuse ourselves from accepting: the total in Table 35 has been subtracted from the total in Table 37 and so have been undivided profits (Table 85, p. 187). Incomparability with the American or the German series need not be stressed. Discontinuance in 1927–1928 of the three-year-average system should be kept in mind. Mr. Clark most commendably attempts to pierce the veil of the actual tax privileges of agriculture. The British income tax law does not allow amortization of wasting assets, but does allow the carrying forward of losses.

The wage bill[1] includes domestic servants but excludes all, even the lowest, ranks of salaried labor; hence, it means something altogether different from both the American and the German series used. It substantially retained its over-time relation to national income, displaying, however, a somewhat more pronounced tendency to rise, while the share of profits was smaller than in 1911, all of which is as it should be according to Kondratieff expectation. Total wages (in millions of pounds) were 1,399 in 1924; 1,437 in 1925; 1,382 in 1926; 1,492 in 1927; 1,479 in 1928; and 1,486 in 1929.

Undivided (total) profits,[2] which with admirable freedom from prejudice Mr. Clark recognizes as "the principal source of savings under modern conditions," displayed a falling "trend." The highest figure (186) occurs in 1924; then there was a decline in 1925 (169) and 1926 (134), but imperfectly reversed in 1927 (158) and 1928 (same); 1929 (138) ushers in the decline, which in England, however, never went into negative figures (minimum, 1931, was still 28). But again we find that consumers' outlay comes very close to the income total. Mr. A. E. Feavearyear[3] has made the attempt to estimate average annual national expenditure for 1924 to 1927. If we add to his list of items of consumers' expenditure the new houses and the furniture which he includes in saving, we get about 3.7 billion pounds, which is above any of our income figures for those years except for 1929. In spite of all differences in conceptual arrangements, Mr. Clark arrives at a substantially similar conclusion, though only for 1929 (*op. cit.*, Table 112, p. 252, and Diagram IV and comments). In fact, "it seems clear that the consumption by the rich [and "rich" is, according to Mr. Clark, everyone with an income exceeding 250 pounds] was in 1929 about level with their private incomes." The unavoidable inference is that there cannot have been much, if any, net saving by private households. Repayments of building loans are nothing else but payments for a consumers' good bought on the installment plan, the funds of the building societies largely represent not new

[1] *Op. cit.*, p. 28.

[2] *Op. cit.*, p. 187.

[3] Spending the National Income, *Economic Journal* for March 1931, see table on p. 60. The way in which Mr. Feavearyear arrives at his figure for savings, which is not less than 400 million pounds, is a good example of the way in which the usual estimates are arrived at: buying a piano indicates saving; and so does buying a house; average annual amount of new capital issues accounts for 256 millions—no deduction for duplication or for payments from *ad hoc* created funds, etc.—and, of course, there "must" have been expansion of private business out of income, and there it is. Mr. Feavearyear's result, presented in another paper (Capital Accumulation and Unemployment, June 1936)—*viz.*, that the aggregate value of private fortunes in Great Britain, deflated for changes in prices of assets, has up to 1929 been increasing by about 300 millions a year—though arrived at after careful investigation, also ceases on analysis to mean what it seems to.

savings but shifts in investment. "Security savings" by workmen and the lower middle classes and net accumulations in life and other insurance companies there were, of course. But even they—if for the purpose in hand we agree to treat them as if they were savings—must have been balanced in part by excess consumption, public and private. We arrive, therefore, concerning the relation between national income and consumers' outlay, at a result similar to those in the American and German cases. One significant difference remains, however. Owing partly to the absence of dazzling hopes for the future and partly to what the writer has no other words for than *character* or *moral stamina*, there seems to have been in England no such general rush into debt as there was in the two other countries.[1] And the credit manufacturing apparatus proffered much less temptation to it.

e. Profits and wages call for additional comment. Concerning the former, see for United States corporate profit ratios—percentage ratio of net income minus income tax to gross income—Chart XLV; for United States corporate earnings Chart LIV; for German dividends—as rather doubtful indicators of earnings—Chart XLVIII; and for United Kingdom "profits"—the most doubtful figures of all—Chart XLIX. We will confine our comments to this country, because American research on the subject, much superior to any other, has most nearly succeeded in bringing out the main contours of this complicated tangle of facts.[2]

In spite of the excellent work done we are, however, as yet far from seeing clearly, and any inference has to contend with disheartening margins of error. Not only is the raw material the product of bookkeeping processes which unavoidably deviate, to an unknown extent that is sure to vary as between industries and individual concerns, from

[1] Housing might be considered an exception; but subsidized and safeguarded and run on the your-rent-will-buy-your-house plan as it was, it may fairly be looked upon as a special case.

[2] The author's primary obligation is to the work of Professor Crum, in particular, to Corporate Earning Power, 1929, but also to his many papers on the subject. In the second place, Professor R. C. Epstein's great investigation has been of great help: Industrial Profits in the United States, National Bureau Publication, 1934, with an introduction by Professor Mitchell. But on the theory brought to bear on the interpretation of the data *cf.* Mrs. Tappan Hollond's review in the *Economic Journal*, 1935. In the third place, mention should be made of L. H. Sloan Corporation, Profits, 1929; S. H. Nerlove, A Decade of Corporate Incomes, 1932; R. T. Bowman, The Statistical Study of Profits, 1934, W. A. Paton, Corporate Profits as Shown by Audit Reports, National Bureau Publication, 1935; and Professor F. C. Mill's Economic Tendencies; as well as to a number of papers by L. Bagwell, L. R. Robinson, and others. The only way toward real insight would, of course, be the detailed study of the life history of individual concerns, part of the material for which is to be found in the discussions of annual statements in the financial press. For Germany the *Bilanzanalysen* of the Deutsche Volkswirt are an excellent source of this type of information.

the actual state of things; and not only does it largely fail to represent at all adequately the limbo in which dwell the abortive and short-lived attempts at enterprise; but even if that were not so, profit figures would at their best give but a medley of economically heterogeneous elements, of which entrepreneurial profits[1] are only one, though we may perhaps hope that, being the most active one, they will show up better in the fluctuations of the aggregate than on other grounds we have a right to expect.

Since these difficulties particularly interfere with the meaning of the various ratios that have been computed, we had better start with aggregate net income of all corporations before payment of income taxes and dividends.[2] The violent fluctuations at the beginning are due to war effects and to the Juglar depression (1919, 9.3 billions; 1921, 0.64), but from 1923 (6.64) to 1929 (9.13) we have what looks like an almost steadily rising "trend," substantially similar to that in total national income: the per cent relation of corporate income to realized national income (Copeland-Crum series) plus corrected corporate accumulations, was fairly constant—for 1923 to 1929 it was 9.2, 8, 10.2, 9.5, 8.3, 10, 10.3. Within this contour, cyclical phases are clearly recognizable both in absolute figures and in percentages. The rise of the fourth Juglar is particularly well marked: from 1924 (5.74 billions) there is a characteristic jump to 1925 (nearly 8 billions) and after that some tapering off (1926, 7.84 billions; 1927, 6.84), interrupted by the abnormalities of 1928 (8.67) and 1929. But this shows what we are to think of that "trend." On the one hand, 1923 and 1924 belong to a Juglar recovery that is followed by a Juglar prosperity; on the other hand, the two abnormally prosperous years happen to be the last ones of the series.[3]

Of the other ratios—we do not revert to the profit ratio in Professor Crum's sense—the lowest is the earnings ratio or percentage of net income

[1] As we have seen in Chap. III, this element tends, in every individual case, to converge toward zero, but does not otherwise harbor any tendency toward equalization.

[2] Exclusive of tax-exempt and life insurance companies. See Ebersole, Burr, and Peterson in *Review of Economic Statistics* for November 1929, and Fabricant, Recent Corporate Profits in the United States, National Bureau of Economic Research, for Apr. 18, 1934. Dividends received from other corporations are excluded.

[3] It is, hence, inadmissible to use that "trend" as an indication of long-run tendencies inherent in capitalist evolution and, in particular, as an indication of long-run tendencies in distributive shares. Even disregarding the necessity of correcting totals for increase in investment, the true picture emerges only if the subsequent depression be included. But it is wholly misleading to use the "trend" in total dividend payments—let alone dividends plus cash value of rights—for either purpose, because, as stated before, they absorbed an increasing percentage of total corporate net incomes. This is interesting evidence about the alleged saving propensities of the period, but is otherwise a purely intracapitalistic affair which has no bearing on the relative fortunes of social classes in the distributive process.

to total assets, which, since not all corporations file balance sheets, is a matter that involves much estimating. For the three years for which Professor Crum calculated it, 1924 to 1926, it was, taking all divisions together, roughly between 2 and 3 per cent, manufacturing industry leading with about 5. For 1926 in particular, the aggregate return on total assets was 1.98 per cent, for manufacturing industry alone, 4.36.[1] The latter figure just about equals the yield of highest grade bonds in the same year—a fact which is of some importance although what we have before us is an average and not a marginal quantity and although profit and interest are obviously not independent of each other. Now, whatever ratio may be relevant for other purposes, this one is relevant for ours. And since it is quite as low as we should expect it to be in the downgrade of a Kondratieff, we conclude that there cannot have been much of a general "profit inflation,"[2] for this would have shown precisely in the general level of income per unit of assets. This may have been different in 1928 and 1929, but such indications as we have do not suggest that the earnings ratio was appreciably higher. In some cases it was lower than in 1926. The reason why it was so low is of course that all losses made by reporting—*i.e.*, still existing—corporations enter into it, as well as the gains. Taking only corporations reporting gains, Professor Crum obtains, for 1926, 6.95 per cent in the manufacturing division and 3.66 in all. But according to his showing, almost half of all corporations worked at a loss or at no profit or at practically none.[3] It follows that expectation from our model is verified, not only as to the size of the earnings ratio, but also as to the reason for that size. For it is obvious that such prevalence of losses or, in a business sense, inadequate returns,

[1] Professor Crum does not add interest charges: as stated, he considers net income. We have done the same in the preceding paragraph. In fact, it is open to question whether to add interest (or only interest on long-term debt) is conducive to a correct impression of the rate of profits. It might just as well be argued that what we ought to do is to deduct also interest on owned capital.

[2] That term is not used in Mr. Keynes' sense, Treatise on Money I, p. 155, but merely to indicate all cases in which profits, by virtue of being obviously abnormal, might be taken as a symptom, consequence, or cause of other abnormalities or disturbances, *e.g.*, as a cause of overexpansion of output or investment or as a symptom of monopoloid underutilization of resources.

[3] This finding is substantially confirmed for the whole period by Professor Epstein's investigation, see *op. cit.*, p. 457: among manufacturing corporations the "with net income" groups amounts to roughly 60 per cent of the total which was, 1919 to 1928, between 70,000 and 90,000. "Thus in all years from 1919 to 1928 the number of manufacturing corporations with net incomes runs from about 50,000 to 55,000 a year, except in 1921 when the figure was slightly less than 40,000." Hence, if Professor Epstein rightly takes exception to the "common impression · · · that about 50 per cent of the corporations in the country lose money," we ought to add that this common impression expresses a very important truth much more nearly correctly than it is usual for common impressions to do.

is but another symptom[1] of the vigor with which our competing-down process did its work and of the fact that the prewar process still persisted: from our standpoint, all this was entirely normal and merely one of the aspects of economic "progress."[2] If it were possible to go into details, further conformity with expectation would reveal itself.[3]

Next we will glance at rates of return on book value of stock equity of "all" corporations. Mr. Fabricant's figures[4] for 1927 to 1930 will suffice. In the grand total they are 5.3, 6.2, 6.2, 2.2; for manufacturing alone 6.2, 7.6, 8.3, 2.6 per cent. They differ from earnings ratios by virtue of the agreements entered into with one another by the various groups of capitalist claimants, and they have, hence, for our purpose, little importance in themselves. But they may again be compared to bond yields. Discarding rather revealing details, we again get the impression that under this aspect even these rates do not suggest "profit

[1] There were of course corporations which existed for the very purpose of working at a loss, others, the profits of which, or more than that, went to the executives; and still others which, being subsidiaries of some other concern, were on principle selling at cost or even at a loss. But it will hardly be averred that cases of these types were significant enough to interfere with our conclusions. Nor can it be objected that the evolutionary process failed to eliminate the antiquated, ill-conceived, or otherwise unsuccessful elements. We have in earlier chapters dwelt on the reasons why losing concerns often "hang on" for some time. But the going-out-of-business rate was considerable throughout, only it does not show in this kind of material. Finally, it cannot be objected that the process failed to work in the sphere of bigger and of big corporations which were individually successful more or less all the time. For the relation between size and success, although not one of proportionality, works not only one way. It may be added that, since the competing-down process takes time (if it did not, economic life would be a continuum of catastrophes) we shall not share Professor Epstein's astonishment at finding that substantially the same divisions and concerns were, throughout, at or near the watershed of loss: all that this proves is that business life is not a game of chance and that profits are not adequately described as windfalls.

[2] What was, from the standpoint of our analysis, a highly "normal" state of things does not seem so to other economists. Professor Crum seems to consider the facts that "numbers of enterprises · · · are dragging along with a very low rate of return on their property," and that "a considerable share of the total gross corporate business is done at a loss" as a reason to doubt "the long-run healthfulness of corporate industry." It is submitted that attention to the logic and rhythms of the capitalist process completely removes any such doubt, although that eminent economist was perfectly right if he intended his guarded statement to imply a prediction of impending vicissitudes. Other economists are in the habit of taking the facts discussed as proof of the wastefulness of competition or of capitalism in general. If, however, they mean more than a triviality, they are wrong. Those losses are not waste or *per se* indications of waste in the sense that the social organism as a whole gets nothing in return, provided they are placed in their proper setting. And they would, of course, be unavoidable also in a planned economy.

[3] Especially in a study of the concerns that enjoyed more than average returns. Mr. Sloan's study (*op. cit.*) of 545 big corporations sheds some light on this and is recommended to the reader.

[4] *Op. cit.*, p. 3; net income is taken "after tax."

inflation." In 1927 AAA bonds yielded a little over 4.3 per cent, in 1929 nearly 5. European prewar experience—American bookkeeping methods before 1909 do not permit comparison with American prewar experience—would, very roughly, support the view that such a margin was about normal. And the 1930 figure is also "normal" for incipient depression. Textiles, leather, and rubber display decline from 1927 to 1929; food-beverages-tobacco, paper and pulp, stone-clay-glass are examples of comparative stability; chemicals and metals, of strong increase —surely nothing to be surprised at.

Finally, Professor Epstein's figures for percentage profit (net income plus interest on funded debt, "before tax") to total capital (stock, common and preferred, surplus, undivided profits, funded debt, but not other debt) are for 1924 to 1928:[1] 5.9, 7.5, 7.2, 6.4, 7.3, but for the sample of 3,144 corporations, 9.2, 10.7, 10.9, 9.4, 10.2.[2] The latter may serve to illustrate what we should have taken as evidence of abnormally high profits if this had been the result for all corporations or even a random sample. The 2,046 manufacturing corporations display still higher figures but, for 1926, the modal percentages are from 5 to 9 and the high average is as much due to the inclusion of all peak successes as to the almost complete absence (less than 4 per cent) of cases of loss. Cyclical fluctuations, the rise of the fourth Juglar in particular, are much in evidence: it is interesting to notice that, contrary to a prevalent impression, 1925 (or 1926) was the most profitable year, though, of course, overshadowed by 1919 and, before that, by 1916–1917. The range of variation as between the 106 constituent groups and, within them, as between concerns is as wide as we should expect.[3]

f. Gathering up the threads of our analysis of wages and employment (this section, I, *a*, II, *a*, and II, *d*; Sec. *C* and Sec. *E*, *passim;* Chap. XI) we will now discuss the behavior of wage rates[4] and the effects

[1] *Op. cit.* p. 50.

[2] *Op. cit.*, p. 53.

[3] The limited purpose of this sketch makes it impossible to do justice to the rich lode of information to which Professor Epstein's work has opened access. It must, however, be stressed again that there is no reason why, in a period such as 1919 to 1929, and in a sample constituted as this is, extra gains should balance extra losses. Nor is it easy to see why Professor Epstein should so categorically aver that the differences in earning rates of different industries "cannot be regarded as differentials due to the rent of superior business abilities" (p. 582). Nothing is further from the present writer's mind than a wish to defend that antediluvian turn of phrase, which moreover points in the wrong direction. But in looking at Professor Epstein's list of particularly successful industries, one may well wonder whether success has not very much to do with the quality of the products of some and the dash of the advertising of others. And what is there so very "unlikely" in the statement that, on the one hand, able men take to promising jobs and, on the other hand, jobs become promising in the hands of able men?

[4] We use rates wherever possible because they come nearest to representing the price

that may have emanated from them. American facts are presented in Chart XLVII.

1. In appraising the evidence contained in these curves a number of limitations must be borne in mind which impose extreme caution in

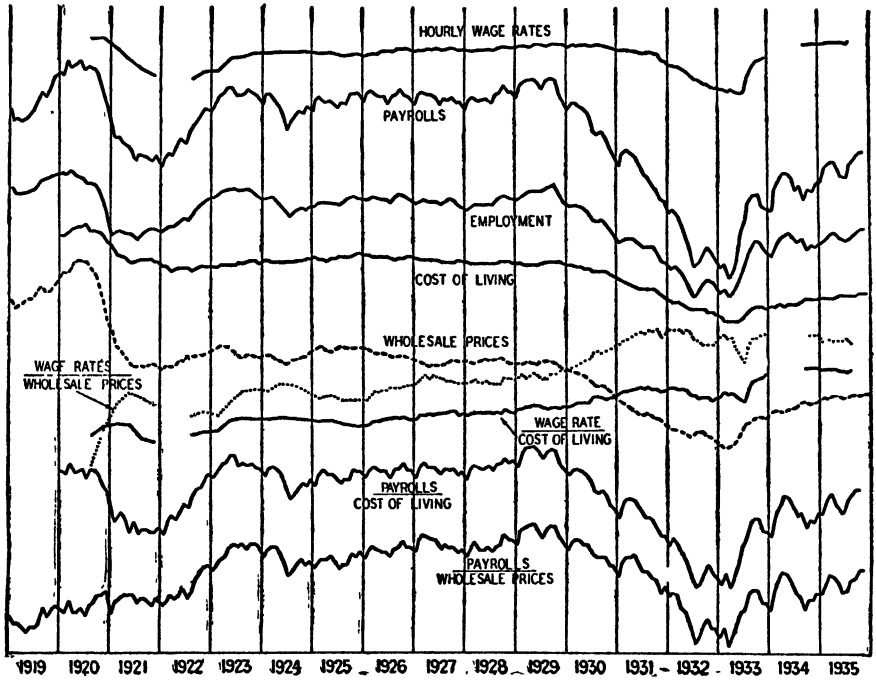


CHART XLVII.—United States (see Appendix, p. 1070).

drawing inferences. Pay rolls, which have been plotted again and can now be compared with both "corrected"[1] and "real" pay rolls, and employment represent, of course, pay rolls and employment in manufacturing industry only.[2] Hence, even disregarding that they do so imper-

of a definite quantity of labor. Weekly earnings per workman or per employed workman or per working-class family are, of course, more important for considerations about welfare, social justice, and so on. They would be more important than rates also for us if we could enter into the question how the working class fared during what was in this country a span (though not one which can be taken as either typical or near average) of relatively uninhibited capitalism. This question must, however, remain outside of our range. We will merely note that in this country actual weekly earnings in manufactures, which had risen to a peak of $29.48 in 1920, suffered a "normalizing" decline to $23.23 in 1922 and then rose again to within 10 per cent of that peak ($27.36) in 1929. See L. Wolman, *National Bureau Bulletin* for May 1, 1933, p. 2.

[1] The same terminology is used in this argument as in our discussion of prewar wages and employment.

[2] For a closer analysis, see W. A. Berridge, *Review of Economic Statistics* for November 1930.

fectly (as is obvious from the description in the appendix), they do not indicate the course of total income and total employment of the working class but only what happened in a sector of the national economy. The full importance of this becomes evident if we recall that the developments in manufacturing industry were instrumental in creating additional employment and labor income in certain other sectors—the sector of "services" in particular—so that, in comparing manufacturing pay rolls with say value of output of manufactures or, as we did before, with total national income, we are not isolating a self-contained relation but cutting through a nexus which is at the same time more comprehensive and more relevant.[1] Moreover, all the series used are open to objection on various counts, that of cost of living, in particular, to the old one that the improvement in quality of the commodities which entered the Ameri-

[1] Uncritical comparisons of wage bills or wage rates with other aggregates, often used as a basis for inferences and value judgments about distributive shares, are a frequent source of much coarser errors than the one alluded to in the text, if not completely meaningless. For instance, there is, for the purposes of the study of cyclical fluctuations, some sense in comparing fluctuations in wage bill with fluctuations in the Census Bureau figures of total transactions in manufactured products which is sometimes misleadingly referred to as the gross value of those products and differs from value added plus value of domestic raw materials plus value of imported producers' goods mainly by the interfirm transactions in commodities. But there is no sense in instituting this comparison for the purpose of measuring labor's share. Nor is there any sense in comparing average per capita earnings of employees with the sum total of, say, stockholders' cash receipts or, still worse, with stockholders' cash receipts plus stock dividends, or with dividends plus undivided surplus. Much erroneous argument is due to the confusion, adverted to in Chap. II, of product per man-hour and the productivity of labor. This accounts for the habit of speaking of variations in the former as if they were variations in the "social contribution" of labor, and of comparing them with variations in wage rates on the hypothesis that proportional covariation between the two is in some sense normal and that deviations from it are something to be wondered at or to criticize. We are not attacking any ideals that may be the premises, but the economic errors that are at the basis, of judgments about, and sometimes even of mere presentations of, the facts—errors which very simple considerations on Boehm-Bawerkian lines should be sufficient to dispel. The boldest attempt at introducing economic meaning into discussions of statistics of that kind has been made by Professor P. Douglas. None of the many reservations that have to be made on many counts, detracts from the merit of his Theory of Wages, 1934. It should be added, however, that many economists who do not, in dealing with wage questions, forget their courses in elementary theory, yet fail to realize the importance of the fact that the fundamental theorem about marginal value productivity of labor is an equilibrium proposition that would at best apply (approximately) in neighborhoods of equilibrium, but cannot in the intervals between them Profits in our sense precisely arise and vanish in these intervals, hence, do not bear any definite relation to "productivity wages." Moreover, if the reader will forgive a triviality which is always obscured in popular discussions, variations in productivity wages and the corresponding variations in output have much less to do with what in common parlance we understand by the personal efficiency of the workmen or with what in this sense may be attributable to their efforts, than with the variations in the amounts of the other factors applied and with the changes in "methods of production."

can working-class budget—food, clothing and what we have termed gadgets of modern life in particular—was one of the outstanding features of the period. Finally, wage rates varied so greatly between localities and, in the same place, between industries and firms that, as we have seen in an earlier chapter, speaking of one national wage rate and its variations might well be thought inadmissible, even if the concept of a national rate per hour were unexceptionable in itself. But it is not. Piece rates, bonuses, and so on drive a wedge between hourly rates and hourly earnings, which makes it impossible to infer the one from the other, still more rates per hour from earnings per week or pay rolls. In using the terms *hourly earnings* and *hourly rates* as if they were synonymous, we are guilty of a serious, though very common, misdemeanor, in extenuation of which we can only plead that this difficulty was not so great from 1923 to 1929 as it afterwards became.

Expectation as to wage rates in the Kondratieff phases obtaining during the period is for a moderate rise in money and a substantial one in corrected and real rates. If we start from the middle of 1923, this is, on the whole, what we find, and the Juglar and Kitchin variations are also recognizable.[1] In other words, there is, as far as that piece of evidence goes, no reason to suppose that variations in wage rates were anything but normal in the sense that they did not interfere with the expansion, or contribute to the subsequent contraction, of business volumes by being "too high": the only question seems to be whether they were not "too low." Again, however, we observe, surveying the whole period and comparing the *level* at which rates moved with that of the last prewar years, not only the traces of the monetary revolution, as we do in other comparable quantities,[2] but also the fact that the downward revision after the postwar peak was comparatively small and only temporary. Hence, it is at least a possibility that the war and the postwar boom left labor a relatively dearer factor of production than it had been before. That it became a relatively more expensive consumers' good is, of course, beyond reasonable doubt. Suggestion to that effect is present in nearly all available wage-rate series, but we will content

[1] Better than in the series used in our chart (see Appendix) the course of wage rates shows in the new composite wage index of the Federal Reserve Bank of New York, the latest improvement of Mr. Snyder's index (see *Monthly Review of Credit and Business Conditions*, for Feb. 1, 1938, p. 12, where that comprehensive index, 1926 = 100, has been charted on a natural scale). The increase in money wage rates between 1923 and 1929 is quite appreciable, the rise of the fourth Juglar shows well. This should be noticed, because there is a prevalent impression to the effect that from 1923 rates did not rise at all.

[2] Price levels, contrary to a widely held opinion, are not among those comparable quantities. The reader recalls that expectations for commodity prices and wages differ fundamentally and that there is not the same reason to expect that wages should fall in recession as there is that prices should.

ourselves with one, the basic wage rate for common labor in the Pittsburgh district, as reported by the U. S. Steel Corporation.[1] This rate was slightly under 20 cents per hour for 1913 (monthly average) and nearly 51 for 1920. It declined in 1921 and part of 1922, but was back again to 50 cents in the monthly average of 1924, after which it remained constant through 1930.[2] It does not make a great deal of difference whether we say that the irregularities at the threshold of our period veil the extent of the rise in money wage rates or, as we put it above, that they raised the level from which the "regular" developments start. In both cases, the course of wages must be considered as resulting from two component tendencies—one which tended to depress and one which tended to raise them. On the whole, however, the latter way of expressing American wage facts seems preferable for our purpose, because it brings out more clearly that that "level," created by war and postwar irregularities and, owing to the resistance offered by the environment to downward revision, substantially left as it was, was a noncyclical and almost constant force throughout.

2. Even if we look at wage rates in this light, we shall hardly find any reason to recede from the result provisionally stated above, *viz.*, that wages did not hamper prosperities or cause relapses by being "too high." There is neither any evidence the writer can think of that they did nor any expectation to that effect from theory- within limits, a wage level that persists through a decade becomes a datum to which the system will in general adapt itself without changing its mode of working.[3]

[1] The series has much to recommend it but is not quite consistent in meaning. In particular, these rates applied to working days of different length, which is not only relevant to daily earnings, and 1918 to 1921 also reflect the higher payment for overtime. The series of hourly rates paid for common labor in road building (Bureau of Public Roads) gives a somewhat different picture. In 1915 the rate was 20 cents. It steadily rose to 49 for 1920, declined in 1921 and 1922 to 32. Then it was at 38 cents for 3 years and rose in 1928 (maximum) only to 40. Hourly wages in soft-coal mining continued to fall after 1922 (85.3 cents; 1929, 65.9).

[2] The index referred to in the last note but two rises spectacularly in 1919 and (three quarters of) 1920, then falls sharply through 1921 and, though recovering substantially in 1922 and especially 1923, does not come as near to the all-time peak as the rate discussed in the text. On the other hand, it continues to rise and ends up in 1929 with a value higher than that peak. The implication is, hence, fundamentally the same.

[3] Qualifications of this proposition will be evident from the rest of the paragraph. It would not be true, of course, of all deviations from the "normal" course of things. But it should be noticed that to some extent it agrees with an opinion that is at present held by many economists, who would, however, neither stress the long-run-level aspect nor accept the qualifications. Professor Myrdal's and Mr. Keynes' teaching may be referred to in illustration. To put it differently, the above proposition formulates an element of truth that is contained in the—otherwise untenable—opinion that the absolute level of monetary wage rates does not matter. There is another element of truth in it which is, however, trivial: changes in the absolute level of monetary wage rates do not matter if all other monetary magnitudes and expressions move *uno actu* and proportionately.

But this merely means that the general complexion of successive business situations was not substantially affected by it, *i.e.*, not only that prosperity remained prosperity and recession remained recession, but also that all phases were presumably as "intensive" as they would have been with a somewhat lower level of wages. It does not mean that there were no effects, in particular on employment. For one of the ways in which the system would adapt itself to a high level of wages consists precisely in making of the dear labor factor or labor commodity as economical a use as possible. We shall, therefore, suspect that during the period an additional source of unemployment may have been present to swell the total: we have already noticed that the Kondratieff phases into which our period falls, would "naturally" display considerable technological unemployment; moreover, it goes without saying that, especially in 1921, but also in other years—1927, for instance—there must have been cyclical disturbance unemployment of the kind that is not *directly* traceable to innovation, as well as unemployment due to random causes, such as the Mississippi flood and others; we may now have to add unemployment of the type which we have called *vicarious*.

Now, our factual knowledge and analytic powers[1] being what they

[1] We are, moreover, at a disadvantage as against such theoretical reasoning on the subject as has recently been offered, since we cannot state the theoretical case without expanding this subsection into a treatise on wages. But it should be observed that the above argument about economizing dear factors is not open to the objection that any increase in the expenses of production which is due to increase in wages is at least compensated by an equal increase in producers' revenue. For, even if that were always so, the individual firm would still have a motive to react to an increase in wages by a reduction of the labor employed *per unit of product*. The consequent rearrangement of its combination of factors cannot be neglected for a period of the length of a Juglar, or even, in many cases, of a Kitchin. And this is as true under conditions of imperfect competition as it is under conditions of perfect competition. It should be added that in other respects also prevalence of conditions of imperfect competition affects the argument about the consequences on employment (and output) of variations in monetary and real wage rates less than might be thought. The elegant argument presented by Dr. P. Sweezy at the 1937 meeting of the American Economic Association (see *American Economic Review*, Supplement, March 1938, p. 156) may serve as an example. The present writer entirely agrees with his emphasis on the importance for employment of cyclical shifts in the demand curve for products (p. 157) and has been at pains to stress this (Chaps. XI and XII) both in the matter of wages and of interest rates. It is partly for this reason that the short-run influence on cyclical phases of variations in wage rates has not been assigned a more important role in the text. But so far as Dr. Sweezy's argument is based on the proposition that with imperfect competition firms will not react to shifts in their cost curves, because this involves raising the prices of their product, which would drive business away, or lowering them, which is self-defeating since it will induce competitors to follow suit, it has, while logically correct, little claim to being considered more realistic than others. For it is obviously more likely that competitors of the firm that contracts output and raises prices *because of an increase in wages*, will do the same than it is that they will try to conquer the field from which the latter now retires; and it is no less obvious that in a highly "dynamic" society the motive for expanding output and, for this purpose, reducing prices is but little

are, it is impossible to speak with confidence and to offer anything like proof. We are inadequately informed about the facts of unemployment in this country until the unemployment census of 1930.[1] From an estimate that has Professor Wesley C. Mitchell's sanction,[2] no "trend" can be deduced that would have any meaning. This accords with previous findings (see above, I, *a*, 3). For 1920, the annual figure already displaying the influence of the slump, unemployment was 5.1 per cent of nonagricultural earners of wages and salaries. The slump figures (1921 and 1922) are 15.3 and 12.1 per cent. The absolute amount corresponding to the former percentage (4.27 millions) probably "surpassed all previous records," but there is no reason to believe that the percentage itself did. In any case it fell back to 5.2 per cent for 1923 and rose to 7.7 in 1924. The years 1925 and 1926, with 5.7 and 5.2, indicate an effect of the Juglar prosperity, but for 1927 we have again 6.3 per cent. The writer thinks that the figure for 1928 was higher than that and the figure for 1929 certainly not lower than that for 1928. It is still more difficult to interpret these figures than it is to trust them. They certainly include very little of typically spurious or "malingering" unemployment, since there was no government dole. But the nomadic habits of the American workman and the high level of earnings that made it easy to tide over a short spell of unemployment and even to look upon it as a holiday, suggest that those figures may include a nonnegligible number of cases that bordered on voluntary unemployment. For these and other reasons, normal unemployment in this country always has

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weakened by the knowledge that competitors will move in the same direction—the standard instance is once more provided by the industry that typifies entrepreneurial behavior so well, the motorcar industry, the leading firm in which repeatedly reduced prices, although it must have known that, in the static sense adopted by Dr. Sweezy at this point, this measure would be self-defeating. We emphasize this because so much has been made, in the discussion of these problems, of special cases and because the theory of imperfect competition has been so fertile in such cases, which, though interesting, only serve to confuse the broad issue.

[1] And even the results of that census have been severely questioned by competent critics.

[2] See Recent Economic Changes, 1929, II, p. 879 and the chapter on labor. The figures are intended to convey an idea of how great unemployment has *at least* been in each of the years 1920 to 1927. If it actually was greater, our argument in this and the next paragraph would apply a fortiori. But it is not certain that it was. While one party to the discussion, the administration included, may have been resolved to see as little unemployment as possible, the other party to the discussion was no less resolved to see as much as possible. The tendency to exaggerate is, in some estimates, as obvious as is the motive for it: in a period in which it was clear that the majority of the nonagrarian population was thoroughly contented with the results of the capitalist process, the critic had little else to fall back upon and naturally made the most of it. A great deal depends upon definition. But, however we define, there was certainly much "unseen unemployment" in addition.

been higher than in Europe. If, in addition, we take account of our expectation from the prevailing Kondratieff phases, the conclusion can only be very tentative that an estimate of minimum unemployment which, even in years of buoyant activity, never fell to 5 per cent, indicates the presence of still another factor that made for unemployment.

Direct observation of everyday practice, however, not only confirms this conclusion but also reveals what that factor was. The effort to be as economical as possible of hired labor, which has been described above as the immediate consequence of relative dearness of labor, was in fact an obvious feature of the period and among the first things to strike a foreign observer of American industrial and private life. As to the former, it is true of course that labor-saving changes in methods of production would have come about in the normal course of our process quite irrespective of the level of wages. But many of them were conditioned by, and most of the noninnovating rearrangements of the combinations of factors of production which occurred in 1920, 1921, and 1922 were clearly reactions to, a price of labor that was high relatively to that of other factors.[1] Money cost of labor per unit of product declined substantially to 1925 and then again from 1927 to 1929.[2] But it is easy to see that, given the high long-run elasticity of the individual firm's demand for labor, this fact strengthens the case instead of weakening it. Two circumstances must, however, be mentioned which worked in the opposite direction. First, the wage rate under discussion is an average. Actual rates tended, on the whole though not always,[3] to differ from each other in a manner that would mitigate effects on employment: they were as a rule lower in weaker geographical or industrial sectors—in the South, for instance, or in the bituminous coal industry—and higher in others that were able to bear it. Second, a wage rate high enough to induce substitution of labor by other factors—or labor of the "manual" kind by other labor—will at first tend to increase employment, because it engenders additional demand for labor-saving devices, most of which have themselves to be produced. During our period that part of current demand for labor-

[1] We shall observe the same phenomenon in the processes of recent years. To the increases in wages that occurred in 1936 and 1937, for instance, industry immediately reacted by "rationalization," which in many cases almost succeeded in keeping labor cost per unit of product constant. Southern farmers, not immediately affected or not so much affected by those increases, are already preparing to meet them by mechanization.

[2] See data for 62 industries, F. C. Mills, Economic Tendencies, p. 404. There was an interruption of the decline, which in those data shows in the figures for 1927, that accords with our expectation for a Juglar prosperity.

[3] Massachusetts, or even the whole of New England, is a conspicuous geographical exception; and the fate of her industries from 1923 to 1929 shaped accordingly. See D. H. Davenport and J. J. Croston, Unemployment and Prospects for Reemployment in Massachusetts, Publications of the [Harvard] Graduate School of Business Administration, *Business Research Studies*, No. 15, 1936, Chart R on p. 63.

saving equipment which constituted a reaction to the prevailing wage level no doubt helped to keep up total demand for labor. This possible source of treacherous "verifications" of high-wage theories should always be kept in mind whenever the effects of wage rates on employment are being discussed.

That the price of labor considered as a consumers' good was very high relatively to the prices of other consumers' goods and that households reacted accordingly[1] is too obvious to detain us. It should merely be added that this reaction went even further than appears at first sight. The mechanization of the household was so much more successful in this country than in others because it not only economized labor but also made it easier to dispense with hired labor altogether. Even the prosperous American family thus learned to perform services for itself which, but for the rate of wages and especially for the rate of wages per unit of service, it would have delegated to nonmembers. It also learned to substitute for enjoyments which involve the direct employment of labor others which do so less or not at all. Thus the American style of private life was powerfully influenced, dominated perhaps, by the level of wages.[2] Part of the demand for durable consumers' goods which was so important a feature of the twenties was ultimately nothing else but a flight from labor and, in particular, from the relatively most expensive kind, *viz.*, manual labor.

It might be asked how the level of wages can have influenced employment and yet not have—appreciably—influenced what we have called the general complexion of business situations. The answer is, first, that the high wage rates themselves largely compensated for the effects beyond those on employment. From our impression that more labor would have been employed in American manufacturing industry if wage rates had been lower than they were, it does not follow that its pay roll would have been much different from, still less that it would necessarily have been higher than, what it actually was (see below). Second, part of the additional employment which would have accompanied lower wage rates, would not, even if it had brought about a substantial net

[1] Households also reacted directly to the price of labor in its productive uses. The relative increase in the use of consumers' goods requiring less labor than others, and the relative decrease in the use of consumers' goods requiring more, may be instanced by the shift of consumers' demand from custom tailored to ready-made clothing.

[2] It will be held by some that that style of life is in itself an achievement in efficiency and by others that it spelled increasing democratization and a moral progress. Certainly. The writer is not criticizing. Also it might be thought that the expansion of the service industries contradicts the statements in the text. But a moment's reflection should convince the reader that the contrary is the case, for certain service industries are nothing but labor-saving organizations for the performance of services which without them would require very much more labor. Apartment hotels "with maid and valet service" are an instance.

increase in the total of the national wage bill, have increased total expenditure on commodities, but would only have redistributed it among consumers. This is best seen in the case of that type of employment which may be designated by the term *help:* domestic service, shop assistance in small retail trade and in the business of the carpenter, painter, plumber, and so on, even in the small and medium-sized factories. For the total amount of employment these cases, persistently neglected by the current theories of wages, are extremely important, though relatively more so in Germany and England than in the United States. And they display a particularly simple relation between employment and wage rates. No other application of the traditional schema of economic rationality is so obviously true to real life as the picture of the owner-manager of a retail shop who "balances" the advantage of not having to get up early in order to sweep his shop against the advantage of indulging in marginal glasses of beer. But although changes in wage rates are promptly reacted to in those fields and although these reactions are by no means indifferent for the sum total of satisfactions and incomes, they do not affect the statistical measures of industrial output or the revenue of manufacturing or commercial industry. For business at large it is indifferent whether the retailer hires a help that will buy consumers' goods, or does the spending himself. What happens in most of these cases is that some earners of what primarily are labor incomes share their flow of consumers' goods with others in return for the latter's services. Perhaps another million men and women could have been inserted into "productive" activity at a comparatively small sacrifice in rates. And the national wage bill in the statistical sense might have been increased correspondingly. But the difference this would have made to the general complexion of business situations would, nevertheless, have been small.[1]

[1] Those of us who believe in the stronger saving propensities of the shopkeeper and in their catastrophic effects on the economic process will have to rate that difference more highly. Even so, the above argument would hold approximately. There would, in this case, also be another argument against high-wage theories, which the writer, however, does not care to stress. We may note in passing still another line of reasoning according to which a higher or lower level of wage rates acts on employment and output through the higher or lower rates of interest which it induces not, as older doctrine would have argued, by relatively decreasing or increasing the supply of "real capital," but by decreasing or increasing unused lending facilities. It is true that variations in the price of a commodity quantitatively so important as labor influence all other prices and quantities and also all monetary magnitudes and expressions. This is, in fact, why a complete theory of wages is so very complicated a matter. But the simple nexus alluded to can be asserted to be operative only by means of so unrealistic assumptions and owes the importance attributed to it so exclusively to a theoretical model which excludes all the vital mechanisms through which variations in wage rates act that we need not proceed with it. Under its assumptions the proposition is, of course, tautologically true.

It will be seen that this analysis does not exclude the possibility that still higher wage rates might have netted a higher total monetary or even real wage bill. The best method of convincing ourselves of this is to envisage a comprehensive organization of all employees acting as a discriminating monopolist. This monopolist would have had to go in many spots below the rates that were actually paid, especially if he had acted with a view to maximizing real wage bill in the long run. But that both the weighted index of money-wage rates and the resulting wage bill might have been higher than they were is not only possible but plausible. Our argument, together with some of the facts glanced at, no doubt suggests that in that case total output might have been smaller or, at all events, not appreciably greater and that there would have been still more unemployment. But all we have established is that employment of labor per given amount of product and direct consumption of services of labor were less than they would have been with relatively lower wage rates. Although we have also seen that this component of total employment was as a matter of fact very strong and that any increase in total output which might have been produced by a further rise in wages would have had to be very great to counterbalance it, the case is one of reasonable likelihood only. There certainly was no sign of "inadequate" consumers' spending, whether due to saving (admitting for argument's sake that saving would have had that effect) or to any other causes, and there were reasons more convincing than that for such underemployment of resources as there was. A theory of the world crisis can be no more derived from any effects of "too-low" than it can from effects of "too-high" wages and all the attempts in this direction—*e.g.*, consumers' not being able to buy what was, or would have been, produced—enter into well-known categories of provable error. But that does not constitute exact proof of the presence or absence of disturbance emanating from wage rates.[1]

3. Much of the above applies, *mutatis mutandis*, also to the German case (Chart XLVIII).

The wage bill, owing to its comprehensiveness, carries different meaning, however, and the data about unemployment are more nearly exact, although it is still necessary to allow for some unseen unemploy-

[1] The reader will observe that this is exclusively due to the data of the period which, apart from their inadequacies, do not allow us to insert into the framework of general theory, which cannot do more than formulate questions and describe possible cases, factual assumptions definite enough to enable us to choose between these cases. There are other situations—we shall meet one in the next chapter—in which it is easier to do this. Other economists feel no compunction about definite assertions in any case. This is due partly to the simplicity of the theoretical models which are satisfactory to them, partly to the readiness to embrace particular factual assumptions.

ment,[1] and although a change in the attitude of the public mind and the possibilities of abuse which every system of unemployment insurance offers may have had something to do with the absolute figures.[2] Moreover, it must be remembered—this, of course, also applies to the United Kingdom—that, while in the United States hourly earnings were (at least they would be if we imagine them to be calculated with ideal cor-

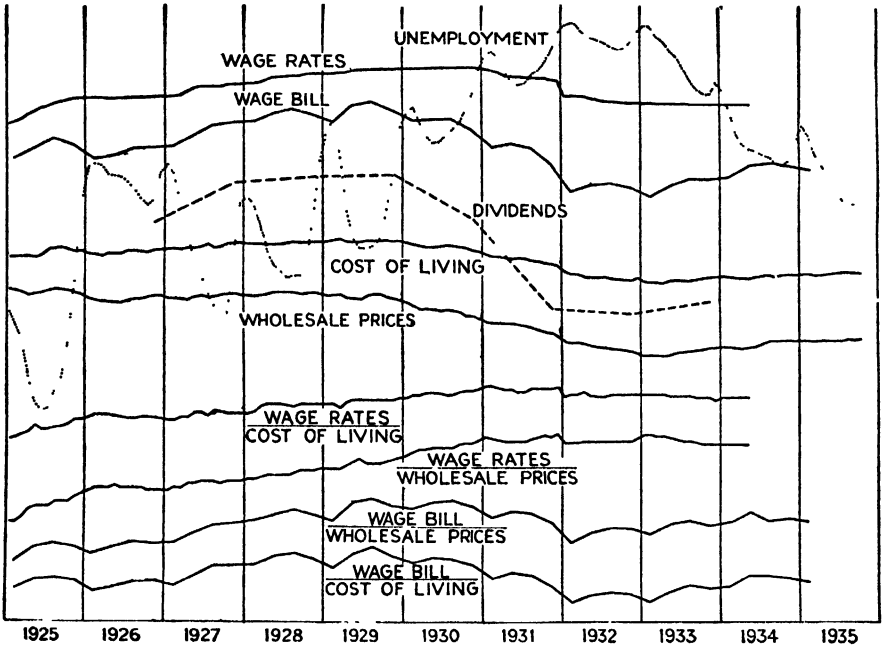


CHART XLVIII.—Germany (see Appendix, p. 1071).

rectness) approximately equal to the money cost per hour of employing labor, in Germany the two differed significantly, especially by employers' contributions to social insurances.

From January 1925 to December 1929 the Reichsamt figures for average hourly trade-union rates (tarifliche Stundenlohnsätze) increased by 47 per cent.[3] This increase was associated, on the one hand, with an

[1] By unseen unemployment we mean unemployment which escapes statistical measurement, for example, because it outlasts the benefit period. We do not mean unemployment which, being only the result of artificial definitions, exists but in the pages of some theorists and may include individuals who think themselves fully employed.

[2] There is no doubt that those abuses have been recklessly exaggerated by some and recklessly denied by others. The war waged by the authorities upon what was termed *black labor* indicates, however, that they were not negligible. But we need not believe, or attach much importance to, the drastic anecdotes that were current about them.

[3] They continued to increase in 1930, but not much. It must be noticed, however, that the "effective" rates (= official basic rates plus various additions, *Zuschlage*), which we

increase of about 10 per cent in cost of living, and on the other hand, with a substantial increase in unemployment.[1] Neither was simply "due" to that increase in rates. Concerning the first, there were several other factors, the most important of which were the agrarian policy (effective in the last 3 years of the period) and the gradual normalization of house rent (expenditure on shelter increased by 55 per cent from 1925 to 1929). But there remains a residue which, being contrary to Kondratieff expectation, can hardly be attributed to anything else but to increase in wage rates. This would mean, of course, that the latter was effective in raising the monetary wage bill above what it would otherwise have been: for *that* increase in wage bill which is the "natural" consequence of the downgrade process would not, as we know from both theory and history, increase the cost of living. It is, however, perfectly plausible that in this case and for the time being the increase in rates actually resulted in a considerable increase in wage bill, because it was crowded into less than 4 years, which is hardly enough for the system to adapt itself fully.

Concerning unemployment, the relevance, not only of burdens directly associated with the employment of labor, but also of burdens apparently unconnected with it, must again be stressed. We have seen that high corporation and income taxes increase the sensitiveness of the economic process to most other disturbances and in particular to any increase in costs. Since taxation of this type was the outstanding economic feature of postwar Germany and higher than anywhere else, it is not possible to disentangle the effects which the increase in wage rates might have had if it had occurred alone. Perhaps there was some truth in the contention of the exponents of trade-union interests that the wage rates did not per se, at least temporarily, substantially contribute to the abnormal and rising amount of unemployment that prevailed practically throughout.[2] We can certainly not use the reasoning that served in the American case, for German wage rates started from what even in 1925 was a low level. But what the high general level kept by wage rates throughout

have for only some industries, rose less. Even if we take "tariff" rates, their increase does not mean, of course, that even in 1930 they—or earnings—were high according to general cultural standards. Real hourly rates were only about 10 per cent above 1914 in 1929 and only 16 per cent in 1930. On the other hand, if it is cultural standards and welfare considerations that we have in mind, the considerable unearned increment in real incomes must be taken into account which accrued to the working class from public expenditure.

[1] The hyperseasonal peak in the winter 1928–1929 is, however, due to the indirect effects of the labor struggle in the Ruhr district (the direct effects of strikes and lockouts are excluded). The peak in the winter 1923–1924, when about one-fourth of all members of trade unions was unemployed, of course, does not count either for our purpose.

[2] The long and acrimonious controversy which was at the time waged on the subject has lost its interest because the arguments used by either party sound hopelessly antiquated now. Even if they be appraised *ex visu* of their dates, little can be said for most of them.

the period did in this country, was in Germany largely done, though by a different route, by the high general level of taxation: wage rates, "social burdens," and taxes taken together may reasonably be held to explain conditions in the labor market which neither of them could explain if taken in isolation.[1]

4. This is not less true for the United Kingdom. Otherwise, the case is, at least in one important respect, more like the American than like the German. We find remarkable stability of money wage rates from the end of 1924 to the beginning of 1928 and then a slight decline, which was to become somewhat more pronounced in 1930. As in the United States, this was preceded by a downward revision from the post-war peak, which extended from January 1921 to the end of 1923, and by a recovery from that which covered 1924[2] but was, in contrast to what happened in America, only slight. Nevertheless, it left money wages at about 96 per cent above their 1913 figure—already associated with some supernormal unemployment—a level which had only to be kept up in order to increase real wages, thanks to the Kondratieff tendency, free trade, and the monetary policy pursued, to nearly 20 per cent above 1913 at the end of our period (annual average). See Chart XLIX.

This is what trade unions and the various public agencies[3] attempted and, during our period, achieved. The slight upward pull exerted by the Juglar prosperity is not visible in the chart and barely so in the series—the index increased by one point for a short spell (December

[1] The above is confined to the years which followed upon inflation, stabilization *and its immediate effects*. As mentioned in a previous note, there was "disturbance unemployment" in the winter 1923–1924. But it is worth noting that the rest of 1924 displayed only a moderate number of totally unemployed—a fact which was associated with a very moderate level of rates.

[2] There is a statistical difficulty about these statements. We are using Professor Bowley's index of weekly wages (see Appendix, description of Chart XLIX), which from January 1925 runs on a new basis. The two series have been "spliced," but no great confidence can be placed in this procedure. This is why we refrain from statements about the course of wages during the war. According to the old series (not shown in the chart, except as transformed by splicing), rates would have followed cost of living with a lag and caught up with it in 1919, more definitely in 1920. The maximum of rates (January 1921; 277 per cent of 1913) would have followed the maximum of cost of living (278 per cent) with a lag of three months.

[3] Along with the increase in the power of trade unions, public regulation of wages developed from the Minimum Wage Act of 1909 to the Amending Act of 1918, the Joint Industrial Councils, the Railway Conciliation Councils, and the Agricultural Wage Boards. If we include the parallel activities of trade unions and take account of the fact that official awards will exert influence beyond the cases decided and beyond the trades under jurisdiction, we may say that almost all wage contracts in the United Kingdom are publicly controlled. This, of course, raises a problem in the interpretation of our curves. But it is believed that what follows in the text is not open to objection on this ground.

1926 to April 1927)—and the unusual lack of covariation with profits which have been inserted in this chart in order to display it, is significant. These features as well as the attendant unemployment, no doubt, invite an interpretation similar to that we have tentatively adopted in the American case. This—*i.e.*, that the general level of wages was "too high" from the start—was, in fact, the opinion of most English economists,[1] and an impression to that effect must have prevailed among

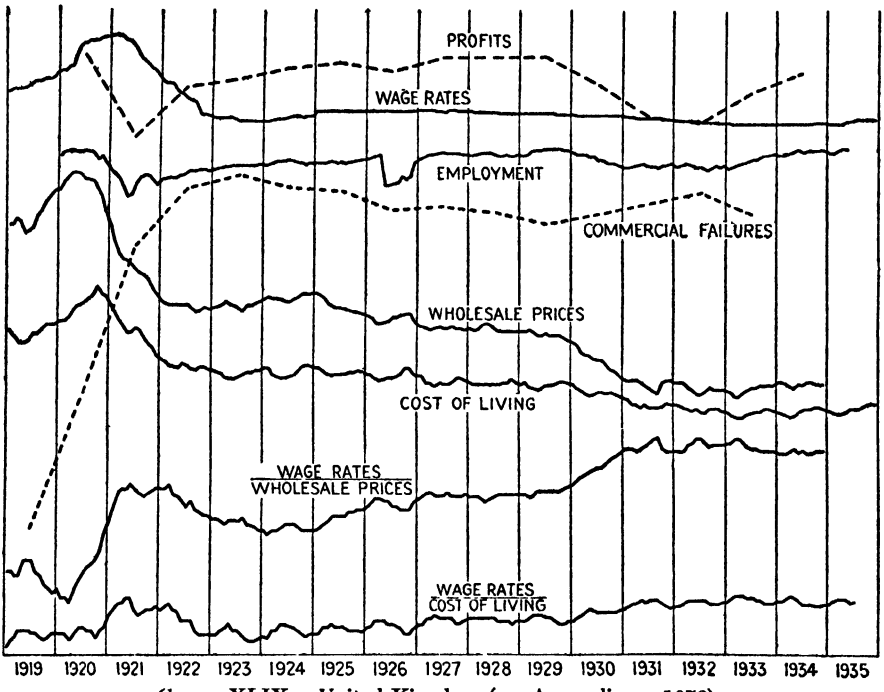


CHART XLIX.—United Kingdom (see Appendix, p. 1072).

trade-union leaders, who, though they energetically defended that level, never seriously tried to raise it. The present writer doubts its correctness, however. That increase in real wages was not so very impressive. It was certainly smaller than it would have been without the war and hardly greater than we should expect it to be in spite of the war, during a Kondratieff downgrade and in a country that as yet substantially adhered to free trade. Any explanation of strains and maladjustments that rests on an increase of real wages by, from 1924 to 1929, little more

[1] That fact is veiled not only by the guardedness of the statements of some of them but also by the fact that the concurrence of others was expressed in an indirect manner, which is likely to escape notice. Advocacy of "monetary expansion" may, advocacy of protective tariffs must, imply attack on real wages while it is at the same time natural for the advocate of these measures to oppose a reduction in money wages.

than 1 per cent per year seems hazardous, if not downright misleading.[1] The national wage bill became burdensome because it was accompanied by a fiscal policy that made it so. If the labor interest did not press for an increase in wage rates, it attained the same object by pressing for, or putting out of court the reform of, taxation which effected a transfer of wealth[2] much greater than any conceivable increase in wage rates could have effected.

Many other factors, however, swelled unemployment percentages during the period under discussion. The great problem that attracted so much anxious attention dates from 1923. Until the last quarter of 1920 the trade-union percentage (unemployed males) was understandably below anything that can be called normal according to any standard. It soared to over 23 per cent in June 1921, but this, too, was readily understandable. In 1923, however—we now shift to the percentage of unemployed insured persons, which was (annual average) 17 in 1921 and 14 3 in 1922—unemployment was still at 11.7 per cent and in the vicinity of that figure it stayed[3] throughout (1924, 10.3; 1925, 11.3; 1926, in spite of strikers disqualified for benefit being excluded,[4] 12.5; 1927, 9.7; 1928, 10.8; 1929, 10.4). There is, as has been stated before, no significant "trend" in this but, even apart from the figure for 1926, which reflects the indirect influences of the great struggle of that year, a "level" of about 10 per cent. Now this cannot be compared to prewar (trade-union) percentages, because the percentage of total unemployment is, of course, likely to be greater than the trade-union percentage which served as indicator in the prewar epoch; because, for the same reasons as in Germany, statistically visible unemployment would presumably be greater in the postwar period, even if we had otherwise comparable figures; and because trade-union regulation, social insurance, and other factors made for reduced geographical and industrial mobility of labor. For these reasons normal unemployment in our sense of the term would, *ceteris paribus*, be greater than it had been. It has been estimated that even in times of active business it would not fall below from 2 to 4 per cent,[5] and we will tentatively accept 3 per cent as a compromise. Second,

[1] The above statement is intended to be read with previous discussions in mind that cannot be repeated. Unconnected with these, it would, of course, be meaningless. It should be added that that increase in real wages was largely at the expense of foreign producers.

[2] The reader will observe that the above statement stresses taxation only and not also expenditure benefiting the masses. For such as it actually was, this would have been possible with almost no interference with the efficiency of the capitalist machine.

[3] Trade-union figures were, however, materially lower in 1924 (minimum of 7 per cent in May).

[4] So they were in 1921.

[5] See Colin Clark, Statistical Studies, *Economic Journal* for September 1931, p. 349. The trade-union percentage was, however, as low as 0.9 in April 1920.

there is the normal effect of the Kondratieff downgrade to take account of, which may, according to the experience of the seventies and eighties, easily double that figure. This already includes the industrial and commercial shifts and readjustments incident to the downgrade processes, but only so much of them as the internal evolution of the country would entail. The great shift from world market to home production which English industry had to undergo in consequence of the shrinkage of her exports is, third, not covered by that estimate. If we accept Mr. Colin Clark's figure[1] that, if England's "position as an exporting country had not been deteriorating, unemployment in 1929 would have averaged about 900,000 as against 1,250,000," and neglect the possibility that this deterioration may also have had something to do with wages, we have here an independent factor the influence of which we will put at 2 per cent in the average, which is certainly conservative. Thus we arrive at the result that 8 out of the 10 per cent unemployment level of the period can plausibly be accounted for, if not entirely without reference to labor policy, yet without reference to any behavior of wage rates other than what it would have been within the most normal working of our process and, substantially, even under laissez-faire conditions. This statement is open to objection on statistical and theoretical grounds;[2] but it still serves, so the writer believes, to give a rough idea of the order of magnitude of what may remain for explanation—as vicarious unemployment—by "rigid" wage rates plus fiscal policy. However that may be, it cannot well be doubted that the postwar unemployment problem was largely one, not of systematic tendencies, but of disturbance by external factors.

III. In proceeding to discuss the course of events in the banking and cognate spheres we will remind ourselves again that this sequence of topics is not to suggest a progress from effects to causes and that, though there is nothing but interdependence between the quantities, monetary and other, which enter into our process, we should, were we constrained to set up causal nexus at all, prefer to put our trust in the reverse one.

[1] *Op. cit.*, p. 349. See *ante*, Sec. *E*, 1.

[2] The indubitable truth, stressed by Professor Pigou in his Theory of Unemployment, that it is impossible to distribute a given amount of unemployment among different causes, does not, however, stand in our way, because there is no objection to trying to estimate the difference which presence or absence of a given factor makes or would make and it is in this sense that our statement should be understood. But it is more serious that the other factors would of course have produced different results at different wage levels and can never be treated independently of them. We restate, therefore: Assuming that, given the fiscal and monetary policies actually pursued, the policy of trade unions (including the threat of general unrest) and of the public wage-fixing agencies kept money wage rates above what they would have been without those unions and agencies, then, whatever that difference was, its responsibility for unemployment can at most have amounted to 2 per cent of the total of insured persons.

This reminder is justified by the fact that it was primarily with reference to postwar developments and in connection with postwar problems that the "deposit logic" committed its most flagrant excesses. It should also be borne in mind that in no country, but especially not in the United States, did banking figures retain their prewar significance—not so much because of statistical reasons as because of fundamental institutional changes: all the more important is it to see the old essence under new forms and phraseologies where the old essence did persist.[1] Our discussion will almost wholly be confined to the American developments.

a. We begin by clearing up a point which may have puzzled the reader in inspecting Chart XLVI. While in the United States postwar pulse chart balances have been represented, in deference to prevailing opinion, by outside net demand deposits plus "circulation" (for explanation, see Appendix), debits have been compared on Chart XLVI with total outside deposits (demand plus time) minus outside investments. According to that prevailing opinion, only demand deposits are balances in our sense or, as most authors prefer to put it, "money."[2] We have a good series for what is referred to as adjusted demand deposits, which is cleared of interbank and includes government deposits,[3] and most of us use net demand deposits as a substitute for purposes for which the other series is not available. But time deposits are held to have no more claim to be included than bonds would have were banks in the habit of issuing them. This view seems correct as far as time deposits represent household investments—genuine "saving deposits"—but for the following reasons it does not seem to be so with respect to the bulk of time deposits in commercial banks—and a great part of the time deposits in savings institutions—which does not constitute investment and has nothing to do with savings and the spectacular increase in which it is a mistake to treat as an indication of changes in the rate of saving.[4]

[1] It may also be mentioned that the figures of national banks, notwithstanding the changes made in their position by the Federal Reserve Act and the fact that their proportionate importance has been on the decrease, might still be used for our period with approximately as much justification as there was in the prewar time. The late A. A. Young was of the same opinion. We shall, with one exception, not go into seasonal variations, which have been considerably affected by the institutional changes, and will hence mention here that the autumnal drain of cash from New York had lost much of its importance. On seasonal variations in general, see A. A. Young, Analysis of Bank Statistics, p. 53 *et seq.*

[2] We do not now follow that usance in order to avoid a needless controversy. The term Means of Payment is less open to objection, but may still include things that nobody wishes to include, owing to the ambiguity of the word *payment.*

[3] See L. Currie, The Supply and Control of Money, 1934, p. 13. Study of Chap. III of that book is recommended as an introduction into the statistical difficulties of the subject.

[4] The exaggerated ideas some writers entertain about postwar saving activity are sometimes precisely due to that mistake. It has been pointed out before, for example,

First, as far as time deposits were actually drawn against, they served from the standpoint of holders exactly the same purpose as demand deposits.[1] Opinions differ as to the extent of the practice (which was prohibited in 1933), but its importance cannot be read off from statistics of turnover. This, of course, is much smaller than that of demand deposits. But on the one hand, it is naturally slow-moving "cash" that is held on time deposits and, on the other hand, it is the *possibility* of drawing (practically)[2] at will that matters. Second, even if no check had ever been drawn against time deposits and if, as in the case of bonds, one would really have had to "convert them into money," they would still have been so very like cash—since, unlike bonds, they can always be turned into cash at par—that the making of the distinction comes, from the standpoint of the holder, very near to hairsplitting. Whoever holds that kind of asset will behave differently with respect to his demand balances, in particular, feel much less constrained than he otherwise would to keep an emergency reserve. By the classing of time deposits with customers' investments an important feature of the monetary situation is completely lost.[3]

Third, a growing habit of keeping on time account as much of one's cash balance as is possible or convenient would suffice to explain the growth of time deposits relatively to demand deposits. Suppose that

that Mr. Lough's estimates of savings are partly due to his treatment of time deposits, although he is not unaware of the point and tries to meet it.

[1] Dr. Currie, *op. cit.*, p. 15, argues ably against this view. But even if the present writer had more confidence in the realistic virtues of Dr. Currie's assumptions, that argument would not meet the point as formulated above.

[2] A bank that refused to honor a check covered by a time deposit, had to be prepared to face an unpleasant discussion and to lose the customer. The writer in some cases observed that clerical staffs had blanket power to honor such checks but had to refer to a responsible executive if they wanted to refuse. Of decisive importance, finally, are those agreements that seem to have been fairly frequent, especially in the West—so the writer has been told by a competent authority—according to which holders of time deposits were accorded a limited right to draw without notice, two or three times a year for example. This is proof that time deposits were by those banks looked upon as a special kind of demand deposit to which time-deposit privileges in the shape of higher interest were granted under the pressure of competition. The Report of the Committee on Member Bank Reserves, 1931, seems to take much the same view. Mention is due to Dr. B. Anderson's important contributions to the subject of time deposits, see, in particular, Bank Expansion versus Savings, *Chase Economic Bulletin*, June 25, 1928.

[3] It might be urged that a similar consideration applies to all highly liquid assets. This is quite true to the extent that neglect of any type of what we have called "near-money" is, in fact, a bar to correct analysis of monetary processes and a cause of the inadequacy of the picture drawn by, as well as of the recommendations of, the modern exponents of the quantity theory or, to use Dr. Anderson's phrase, those economists who know nothing but "the monotonous tit-tat-to—money, credit, prices." But we might reply that such assets cannot be normally relied on to represent so prompt a control over a definite sum as do time deposits.

there are in a country only demand and "genuine savings deposits." The former all "circulate" but display different rates of activity ranging from several hundred turnovers to almost zero per year. Then let a new name, say time accounts, and some privilege be introduced for balances which are being used less often than an arbitrary number of times per arbitrary period, people being invited to register for these time accounts on condition that they use them only at certain dates or at a certain notice. In the name of all that we know about the behavior of people, we must assume that they actually will register, first and foremost, with respect to that part of their demand deposits which they would anyhow not use before the assigned dates or need not use without notice, and second, with respect to another part which can be made to qualify with but little inconvenience. Nothing whatever has changed *in the behavior of those who register*. In particular, the holders of these new time accounts spend exactly or almost exactly what and when they used to spend before. Yet time deposits have emerged which, incidentally, may reflect credit creation just as much as demand deposits.

This paradigma is merely intended to illustrate a principle. It is not held that the new practice will not make any difference in other respects: if, in particular, legislation imposes higher reserve proportions on demand than on time deposits, the shift of balances from the former into the latter category will increase the lending power of banks, which is precisely how the growth during the twenties of time deposits in this country became an instrument of monetary expansion; and any payment out of time deposits, no matter whether effected directly or by means of a previous conversion into demand deposits, will, if it induces a more than momentary shift from time to demand account, have the opposite effect,[1] the same as an increase in reserve requirements would have.

[1] Dr. Currie rightly emphasizes this. If the bank in question happened to be "loaned up," it would, in consequence of such a payment, have to reduce its loans or investments by a corresponding though not equal amount. But if time deposits are freely flowing in or demand deposits have a tendency to shift to time account—an essentially temporary state of things, no doubt, but one which prevailed during the twenties—the bank will in the typical case be relieved of that necessity, even if it were so perfectly loaned up as Dr. Currie must, by virtue of his theoretical scheme, assume any bank on principle to be and even if hence any use made of time deposits would necessarily entail some contraction in other demand deposits. Perhaps another comment will be useful, though it is really implied in what has been said in the text. Let us return to the hypothesis that payment can be effected only by draft on demand deposits so that time deposits can serve the purpose in no other than the indirect way, *i.e.*, through previous acquisition of a demand deposit. Then firms and households will for each day acquire, against time deposits, demand deposits sufficient to provide for the expected payments of that day. But not more. The rest of the balance will stay on time account. Demand deposits and bank reserves will be "economized" thereby. But exactly as, *ex visu* of any given day, we do not confine the concept of deposits to that amount of demand deposits which changes

This is why we emphasized the growth or spread of the habit to insure that there should always be a *net* shift toward time account. We may further approximate the paradigma to American reality by granting that many big concerns and rich households did not stoop to availing themselves of the advantages, in their nature modest, which we suppose to have been attached to time accounts,[1] so that it may be primarily the middle and lower strata of depositors who did so; by allowing for savings institutions' trying to acquire slow-moving balances, once the trick has been learned, while commercial banks had an additional motive to hunt for genuine saving deposits, as soon as they were in turn privileged in handling them;[2] and finally, by adding that temporarily idle funds will naturally tend to be placed on time account.[3]

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hands on that day but extend it for obvious reasons to the total of demand deposits in existence, so we would for the same reasons have to include the time deposits that are not converted into demand deposits and hence remain time deposits, even if that part which is converted were always, necessarily and entirely, balanced by a contingent contraction of other demand deposits. This is what our paradigma is intended to show. The important but nonessential difference in reserve requirements has certain consequences, but it does not alter the nature of time deposits.

[1] Statements about banking practice differ on this point. Dr. Anderson holds that the time deposits of New York City banks chiefly consisted "in temporarily idle funds of great business corporations or of foreign banks or of rich investors who had temporarily disposed of investments and were awaiting opportunities in the market." (A Critical Analysis of the Book by Lauchlin Currie, address before the New York chapter of the American Statistical Association, Apr. 26, 1935, p. 20) while others hold that "bank statistics show clearly that there could have been no appreciable amount of shifting of deposits from the demand to the time category on the part of large depositors in national banks" (D. R. French, Significance of Time Deposits in the Expansion of Credit, 1922 1928, *Journal of Political Economy* for December 1931). The two statements do not conflict as much as they seem to. But it is not unlikely that those big concerns which had such good opportunity for temporary investment resorted less to time accounts than did smaller ones that had not. And it is just as well to note that this point is not essential to our argument.

[2] Of course, both savings institutions and commercial banks always did do that, as we have seen before, in this country as well as in others. The Federal Reserve Act only added another stimulus and, for national banks, additional powers.

[3] We hold, agreeing in this with Dr. Anderson, that the bulk of time deposits has much more to do with credit creation than with savings. This is not refuted by the fact that deposits evidenced by passbooks averaged almost 72 per cent of total time deposits in national banks since the autumn of 1928, from which Mr. D. M. Dailey (National Banks in the Savings Deposits Field, *Journal of Business* for January 1931) infers that "in excess of four-fifths of the time deposits reported by the national banks represent the accumulation of savings:" there is no reason for inferring that, though there is for taking the large use made of the passbook method as an indication that it was, in fact, firms and households of moderate means which primarily availed themselves of the opportunity offered by time accounts. But while denying the alleged relation of time deposits to saving, we do not entirely deny their relation to underspending. In order to bring out what seems to the writer an important principle, our paradigma has been so framed as to be independent of

Fourth, a motivating privilege such as has just been envisaged, was provided by the reduction made by the Federal Reserve Act in the amount of reserves to be held against time deposits and the further reduction enacted in 1917. The fact that the spectacular growth of time deposits dates from that time strongly suggests a connection. Although the circumstance that banks offered a higher rate of interest on time than on demand deposits should suffice to prove that they thought the former more advantageous than the latter, many writers have argued that the gain which banks could expect from a transfer of demand deposits to time account was, owing to the incident interest charge, small and that there was, hence, little if any motive for them to encourage their customers to effect such transfers. That depends on what they did with the resulting increment in their lending power. Economists who assume that they would buy governments had no difficulty in showing that the gain was small. In fact, the writer believes that in some cases there must have been a trifling loss. Smallness of gain, however, is frequent in the banking business and many a small loss is undergone in order to acquire or satisfy an otherwise valuable customer. And if the increase in lending power went into customers' lines of credit or into mortgages—real estate loans rose from less than 600 millions in 1919 to nearly 3.2 billions in 1929 (all member banks), a rate of increase much greater than that of total earning assets—there was not only gain but a very attractive one. But this is not the point. It is quite sufficient that there was motive on the part of customers. About that there cannot be any doubt. Moreover, while a nonnegligible premium on time deposits was offered

variations in the rate of spending and as to show that spectacular growth of time deposits could come about without any underspending as well as without any saving. It follows that it would be dangerous to rely on time deposits as an index of people's aversion to spending. Still, although a demand deposit may, and often does, become as idle as any time deposit, it is reasonable to assume that sums which are not expected to be wanted at all for a time are even more likely to migrate to time account than others. This fits in very well with the violent fluctuations in the rate of growth of total time deposits, which to the writer's astonishment Dr. Currie flatly denies (*op. cit.*, p. 132). They increased from December 1921 to December 1927 (reporting member banks; monthly averages of weekly figures) by about $3.4 billions. Nearly two-thirds of this increase occurred from 1921 to 1922, from 1923 to 1924 and from 1926 to 1927 in obvious connection with banks' investments (see Chart L), which in turn were no less obviously related to open-market purchases of the Federal system. *These two-thirds, at all events, are pure creations of monetary management* and emerged on time account because, in accordance with our contention, emphasized throughout this book, such creations tend to become idle. Deposits of all national savings banks, on the contrary, increased in fact much more steadily (by about 500 millions a year from 1921 to 1927, figures as of June 30) and are "not affected to any great extent by inflows and outflows of reserve funds," which Dr. Currie avers with respect to time deposits (p. 99). But for the reason mentioned in the preceding note we hesitate to accept their rate of increase as a standard by which to distinguish genuine savings from other time deposits.

to them in the shape of a rate of interest considerably higher than that which was paid on demand deposits, changing habits greatly reduced the incident inconvenience, at least for households: the greater the relative importance in the budget of expenditure on durable goods, payment for which is lumpy and postponable, and the more widespread the practice of charge accounts, the less need there is for absolutely ready cash or advantage in holding it.

The view that in the twenties time and demand deposits were essentially the same kind of thing is verified by the relation to each other of the two top curves on Chart XLVI. From total outside deposits, banks' investments have been deducted on the theory that they tend to be idle. In doing this we are no doubt overshooting the mark—for we know that even for prewar times it would not be true to hold that banks' investments *always* proceed from the banks' initiative—as we are overshooting it by including all time deposits. All the more interesting is the result of the experiment. Our deposits curve fits the debits curve excellently from 1921 to 1927 and the different behavior of the two curves in 1919 and 1920 and again in 1928 and 1929 is easily accounted for by the irregularities of those years, mainly by the excesses of speculation, which would also influence outside debits. The curve of outside demand deposits does not fit so well and thereby raises a typical spurious problem, *viz.*, why the "velocity" of these deposits should have so much increased[1] and how it was possible for it to do so or, to put the matter differently, how it was that outside debits behaved as they did (increasing from 17.6 billions in 1919 to 27.7 in 1929) with demand deposits increasing only from a little over 6 billions to about 8.[2] The much more natural complexion of the curve of "velocity" of total outside deposits (see again Chart XLVI) will strengthen our belief that we have in fact got hold of the approximately true figure and that our diagnosis of the nature of time deposits is correct.[3] But it must be added that there is another possible

[1] The index of the rate of turnover of demand deposits in principal cities, which has been constructed by the Federal Reserve Bank of New York (1919-1925 = 100), in fact starts with 100 at the beginning of 1921 and after a fall returns to it in 1922, then remains at that level through 1924, after which it rises, with an interruption in 1926, until it reaches 200 in 1929. This includes New York. But if we exclude New York, the paradox remains, although toned down.

[2] Monthly average of deposits other than U. S. Government deposits, including Due to minus (Due from plus Items in Process of Collection). Dr. Currie's series of total money "supply" (*op. cit.*, p. 33; including Cash outside Banks; objections to the term Supply, which in this connection is so pregnant with misleading associations, need not be repeated) displays, of course, the same phenomenon. It increases from nearly 22 billions in 1921 (when *total* debits were nearly 33.3 billions) to nearly 26.7 in 1929 (when *total* debits were nearly 78 billions). Since total debits are heavily loaded with speculative transactions, this is not more but less striking than the comparison in the text.

[3] It may be said at once that the same diagnosis applies to English deposit accounts and to what corresponds to these in Germany although, owing to the absence of the particular [illegible] American banking legislation, to a lesser extent

reason why comparatively so small an increase in outside demand deposits should have proved adequate. War and postwar boom profits were not annihilated by the subsequent crash. Only an insignificant shrinkage of outside demand deposits occurred in 1921. There is a difference of only about 1 billion between the monthly peak in 1920 and the monthly trough in 1921 and this was quickly made up. In other words, we see again that the monetary system of the United States stayed expanded after the war and did not contract in response to the temporary downward revision of values. Thus, the latter left people amply provided with owned funds and for a time at least, *i.e.*, while this slack was being taken up, the economic body was to some extent able to grow within the existing coat.[1] However, taken at its highest possible value, this explanation cannot be considered as sufficient, even to the end of 1924; while after that, *i.e.*, precisely for the years when the phenomenon of increasing "velocity" is most clearly marked, it is not available at all.

b. Total deposits minus investment, then, unlike demand deposits, display during the period the general tendency or descriptive trend that prewar experience leads us to expect, though the "normality" of the observed gradient, in this case as it was in that of wage rates, is compatible with an abnormally high level owing to the location of the starting point. Accepting the latter, however, we also see that fluctuations themselves were not less normal from our standpoint than the descriptive trend they produced. In particular, we see the footprints of the Juglar recovery and the four phases of the last Kitchin of the third Juglar.[2] In 1925 and after, the prosperity and recession of the fourth Juglar are well marked by an increase in our quantity and by its tapering off. While this does not show in outside demand deposits alone, another feature of special interest can be observed just as well in these: the behavior of deposits with respect to debits, from the last quarter of 1929 on. While debits fell sharply, both outside demand deposits and total outside

[1] Some part of the surplus funds which were set free by the reduction of operations and the fall in prices may have migrated to time account very early in the downturn, or even before. This possibly explains part of the strong increase in (total) time deposits in 1920, the monthly average of which year is nearly 800 millions above that of 1919. The general swerve toward the time account must, however, not be forgotten and makes it difficult to be very positive on the point.

[2] These we also see in the demand deposits, which do not otherwise reflect well either the "trend" or the fluctuations. It has been pointed out, in proof of a fundamental change from prewar conditions and of the dominating influence of open-market operations that demand deposits increased strongly in the years of relapse, 1924 and 1927. Without denying the element of truth in this—even our series is, of course, not quite independent of open-market operations, although much less affected by them—it should be observed that the deviation from prewar experience is so very obvious only in yearly figures and *total* demand deposits. As to the case of 1924, for instance, even total demand deposits reflect the business situation quite faithfully by sagging from the middle of 1923 to the middle of 1924 in correspondence to loans and discounts (see below). And New York demand deposits are a different matter and should not be included.

deposits minus investments fell much less. As we saw at the beginning of the period that a cloud of potential inflation failed to burst, so we see now that in 1930 business operations contracted in the midst of a most plentiful "supply" of money—the coat refusing to shrink in proportion to the shrinking of the body. The behavior of total outside deposits, total deposits, and New York net demand deposits, and the relations of these series to that of outside debits should now be studied (Chart L).

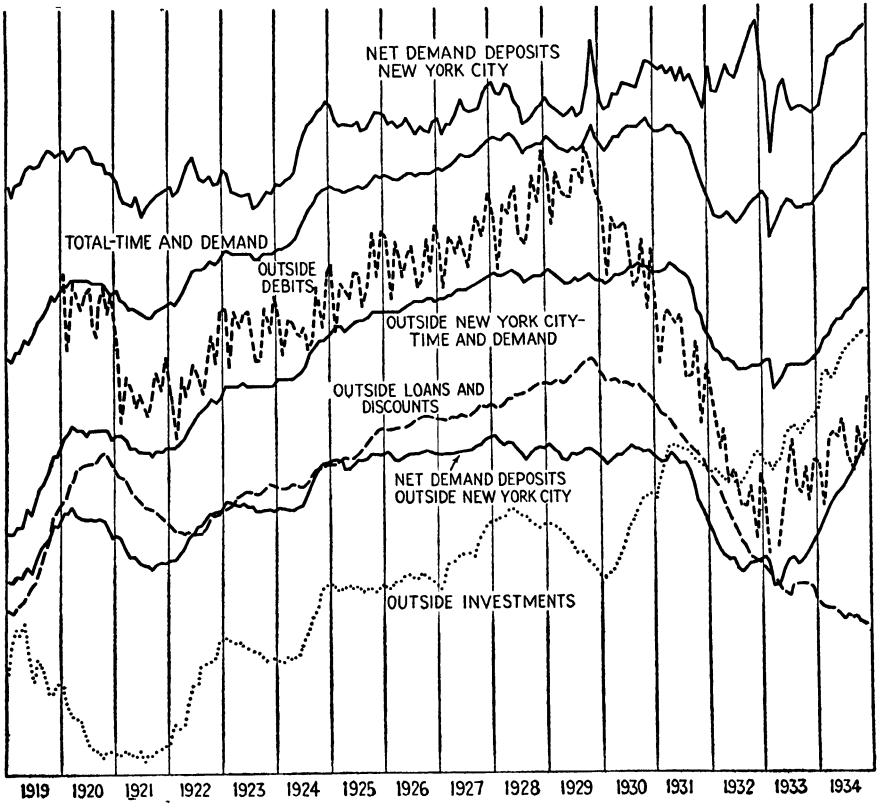


CHART L.—United States (see Appendix, p. 1072).

The outstanding fact of very close covariation between Outside Loans (and Discounts) and Outside Debits next calls for our attention. Clearly the former dominated the latter during our period quite as much and in quite the same sense as ever. This emphatically normal state of things loses nothing of its importance by two features which have been much stressed in the discussion of postwar banking figures.

First, it will be observed that while dominating debits, loans did not dominate the link between the two, *viz.*, deposits. This is obvious in the case of net demand deposits, though not so much as some theorists

would have us believe,[1] but to a lesser extent it is also true of time plus demand deposits. It is not true only for our quantity, for which covariation with loans is, of course, tautological. But this circumstance testifies precisely for our view and against the revised quantity theories, for it shows that, broadly, only those variations in deposits which corresponded to loans, turned into variations of expenditure, and that those which owed their existence to other factors did not, whereas according to those theories they should have done so just as much as any other. Once more, facts conspire to suggest that regulating deposits does not imply regulating expenditure or the pulse of business. And this means that the new feature in the behavior of deposits and the factors responsible for it cannot claim the significance widely attributed to them, though, as we shall see, they may claim another.

Second, it has often been pointed out that, whatever total loans and discounts may have done, the commercial loans as represented by the All-Other category of banking statistics[2] remained almost stationary throughout the period. It is true that if we pass by the first years of the period and take for a starting point 1923, when liquidation of the crisis may be assumed to have been over, we get an almost steady upward movement and a total increase amounting by 1929 to nearly 2 billions for weekly reporting member banks in principal cities.[3] But if we exclude real estate loans, the figure for all member banks (June 30) never reaches the 1921 peak, and only 1926, 1928, and 1929 display any marked increase. Even if we do not do this, the share of all other in total loans declined from about 70 per cent in 1921 to below 55 per cent in 1929. This, of course, is no new tendency but only continues one that was present (in national bank figures) before the war. It is new only in that it now spread to absolute figures.[4] If, however, only quantitative

[1] A. A. Young (*op. cit.*, p. 62) rightly emphasizes, for national banks, "the general correlation of the movements of loans and discounts and of demand deposits both in and outside of New York City." The divergence, however, asserted itself mainly after the date (or from shortly before the date) at which his discussion ends. And there was, of course, considerable divergence in details. The more important cases are associated with the investment item. But this explanation is not always sufficient and in some cases nice problems arise into which, however, it is not possible to enter here.

[2] Let us recall that the best that can be said for that category is that it has more to do with what is usually referred to as commercial credit than others. But many loans on securities are no less genuinely business loans. The greater part of loans on real estate is not.

[3] See the *Monthly Review of the Federal Reserve Bank of New York* for Oct. 1, 1932, p. 73. New York is included. Professor Mills (*op. cit.*, p. 450) gives, for all reporting member banks, also including New York, an average annual rate of increase of 3.2 per cent, for loans on securities 10 5 per cent, between 1922 and 1929.

[4] Dr. Anderson (*Chase Economic Bulletin* for Apr. 8, 1927, p. 18) drew attention to the low percentage of total member bank assets formed by paper eligible in the technical sense. Dr. Currie also stresses this point (*op. cit.*, p. 117). The theoretical schema underlying the

and not qualitative, the change is, within the secondary order of importance that attaches to the figures and processes of the sphere of credit, a fundamental one and, hence, requires careful consideration.

One thing is clear: it did not originate with banks since these stand to lose by it what, in the long run, is their most profitable line of business. It must have been the customers who turned away from this method of financing. Among them we can discard the households, for these continued to borrow freely—in fact, more freely than ever—as the development of real estate loans and of personal loan departments suffices to show. They also borrowed indirectly from banks, through various types of financing agencies which discounted with banks, and through helping to create installment paper, which also formed an increasing percentage of all other loans. Nor can the small and medium-sized trading and manufacturing business be responsible for the change, for this remained, much as it had always been, dependent upon the customers' line of credit for all its needs, the financing of essentially long-term investments included. Corporate business, hence, is what, in accordance with common knowledge and general opinion, emerges from this process of elimination. But why should bigger and big business have taken this new departure? Simply because the plethora of money made it easy and profitable to embark upon a course which in itself appeals to executives who are always jealous of anything that involves a certain amount of supervision and who for this reason never love their banking connections. As stated above, in the first years of the period the more successful concerns had at their disposal ample funds with which to finance themselves. These had been previously assembled from profits[1] and in many cases preserved by timely withdrawal from the firing line. Later on, when bond yields declined and stock markets boomed, money flowed so easily toward corporate industry, at rates with which no bank could compete that, taking full advantage of this situation, concerns became, in the process of expansion, creditors rather than debtors as far as ready money is concerned, keeping financially ahead of requirements and eventually entering the great depression with a financial outfit which was nothing short of luxurious.[2] Some of them were even able to finance

Federal Reserve Act increasingly failed to fit American conditions. The former author dislikes, the latter likes this development, but for us it is only the facts that matter.

[1] We may recall that undivided profits of corporations, uncorrected for difference between depreciation at cost and at current prices, amounted to 4,310 millions in 1919, a figure never reached again. But financing from profits of course continued.

[2] The cash item of corporate balance sheets reflects this imperfectly, but it does reflect it. Its percentage relation to total assets can be calculated from the corporation tax material, from 1926 on. Including with cash tax-exempt securities, which served as temporary investments, and deducting from this item for All Corporations the cash plus tax-exempt investments held by banks and financial corporations, we get for industrial and commercial

their investments in 1935 and 1936 by funds that had been raised during the speculative mania of 1928 and 1929.[1]

Now, that "money" still came from or come through banks. It was to a great extent created by them, exactly as it would have been had corporations directly borrowed from them. Only it was not created through loans to *industry*, which would have swelled other loans, but through loans to *buyers of bonds and stocks*, which swelled loans on securities. At least this is that alternative to lending directly to industry which will bring out most clearly the point we are trying to make. Banks, of course, also bought bonds—and stocks through their affiliates—and placing these acquisitions became so important that a new type of bank executive emerged who had little of the banker and looked much like a bond salesman. But this we will put aside for the moment in order to focus attention on the fact that to a considerable extent credit creation by loans on securities was a substitute for "business loans"—hence, to the same extent not a net addition to total volume of balances—and, inasmuch as it was, served the same purpose and not an additional one. It does not follow that the actual amount of balances created was the same as that which would have been created by the orthodox method or that the change, being one of mere technique, was unimportant. On the contrary, it is safe to say that in the midst of rioting stock markets creation went on at a pace very different from that which would have been set in bankers' conference rooms. The steering and balancing parts of the capitalist machine were seriously and perhaps permanently impaired. From remedies eventually applied to the ensuing situation a novel apparatus of banking may well evolve from which there is no road back to what, from the standpoint of our model, would have to be called normal conditions. Nonetheless it is necessary to take account of that substitution of one method of deposit manufacture for another if we wish to speak—the writer does not care whether we do or not—of the "inflation" of the twenties. And for the immediate purpose in hand it is

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corporations the following amounts in billions (we add the years of the great depression): 1926, 9.9; 1927, 10.3; 1928, 11.1; 1929, 10.9; 1930, 10.4; 1931, 9.1; 1932, 9.1; 1933, 8.8; or in percentages of total assets: 5.65, 5.86, 6.13, 5.57, 5.37, 5.20, 5.37, 5.41 per cent—a series the remarkable stability of which is well worth noticing.

[1] Acceptances and commercial paper bought by banks are, to September 1934, included in Other Loans. But from the standpoint of the relations between corporate industry and banks, these items should also be excluded and listed among the methods of independent financing. For big corporations either directly or—through intermediate agencies owned by them, such as acceptance corporations—indirectly appealed to the open market much as the Federal Treasury did. And although banks were *faute de mieux* forced to buy such paper, these purchases do not constitute "discounting for customers." This practice, in fact, meant, in the short-term field, as complete a rupture of the old bank-customer relation as bond issues meant in the long-loan field.

important to recognize the same old process of financing enterprise in the new garb, the material of which includes the security loans, and to see both the stagnation of "commercial" and the expansion of security loans in this light.

Total outside loans and discounts, then, are the really relevant figure. Their share in total earning assets varied from 1922 to 1928 between 71 and 74 per cent.[1] And there is nothing obviously abnormal or unprecedented in their average rate of increase—their "descriptive trend"—*during the period.* They also move in the Kitchins, and show the rise of the fourth Juglar, according to expectation. Divergences in the behavior of the components give rise to various problems of detail into which we cannot enter. First differences of the original items of the all-other loan series reflect short-run business situations more faithfully than first differences of the original items of the security loan series—which is easy to understand on grounds of financial technique—so that the former series remains, for some purposes, more useful than the latter.

c. Turning now to members' investments,[2] we will avail ourselves of the opportunity to look at some of the developments discussed under (*a*) and (*b*) from another standpoint, *viz.*, the standpoint of the banks. Parallelism between loans and deposits has, of course, never been perfect but always interfered with by, first, the efflux from and the influx into banks of currency; second, the efflux from and the influx into the country of the monetary metal (including efflux into and influx from the arts); and, third, banks' investments. During the period under discussion, none of these factors operated as it did before the war. But the change that primarily impressed theorists and, in fact, amounted to a revolution in banking practice and in the structure of earning assets occurred in the absolute and relative importance of the third (see Chart L).

This change dates far back. As we know, it is clearly indicated in national bank figures ever since the nineties, and that theoretical interpretation to which we have grown accustomed—the investment theory of banking—could have been inspired nearly as well by the course of events from 1899 to 1908, when "secured" loans and investments behaved

[1] 1920, 1921, and 1929 display higher pecentages. It is of some interest to note that there is a rough covariation between the year-to-year changes in these percentages and the "velocity" of deposits; between the ratio of loans and discounts to net demand deposits and the commercial paper rate; and between the latter and the ratio of loans to banks' investments. Interpretation from our standpoint is too obvious to detain us.

[2] The figures plotted on Chart L are, in fact, those of (weekly reporting) member banks outside New York (see Appendix). But the reader should remember that within our general reasoning the term Member Bank or simply Member has a technical meaning of our own. Weekly reporting member banks outside of New York are, on the one hand, only a sample of a more comprehensive universe designated by this term in its usual meaning and for us, on the other hand, only the real-world representatives of a theoretical entity (= all noncentral banks).

in a manner highly suggestive of postwar developments. The Federal Reserve Act and the amendment of 1917, on the one hand, and the gold influx, on the other, providing additional facilities, war finance imparted an impulse[1] which would not in itself have meant more than a very natural temporary deviation, under the pressure of exceptional circumstances, of no permanent importance for the financial mechanism of cycles. We observe, in fact, that as soon as those circumstances had passed, banks were anxious to normalize their position and to reduce their share in the iceberg that was swimming about and encumbering navigation in the money market. Since this was done during 1919 and 1920,[2] when the postwar boom was in full swing, we may infer that, while maneuvering back to normal conditions, they were also maneuvering for room to satisfy industrial and commercial requirements.[3] But this endeavor to eliminate what, at the beginning of the period, they (and also the Federal Reserve Board) seem to have felt to be an abnormal and undesirable situation, was soon given up and never resumed. By the end of 1922 total investments were almost back to the peak figure,[4] to increase to ever new levels for the rest of the period.[5]

Interpretation must start by observing that within this descriptive trend fluctuations correspond, at least as to direction and timing, to expectation from our model. By increasing their investments in the depression of 1921 and in 1922, by decreasing them in the course of 1923, increasing them again in 1924, keeping them substantially steady during 1925 and 1926, increasing them in 1927, and mildly decreasing them in 1928 and 1929, banks substantially conformed to the prewar pattern of behavior: there was fairly satisfactory inverse covariation between rates of change in investments and in loans which, particularly visible after

[1] "All Banks" increased their investments from about 5.5 billions in 1914 to about 11.9 in 1919 (see 15th annual report of the Federal Reserve Board, p. 111). The national banks up to 1917 confined their holdings of governments substantially to what was necessary to cover their note circulation and government deposits. Those in New York City took the great stride in that year, those outside New York took it in 1917 and 1918 and reached the maximum at the beginning of 1919.

[2] New York banks also liquidated other than government securities. Outside banks did so only to a quite insignificant extent and only during a few months.

[3] And in fact a very substantial increase in loans occurred, as has been noticed in Sec. *E*. As has been stated there and will be repeated again—it can never be repeated enough—this is very material to any rational appraisal of that "deflation." In 1921 the position of banks was further strengthened by a decrease of currency in circulation which amounted to 940 millions, by an increase in treasury currency of nearly 220 millions and by the gold influx (749 millions).

[4] Outside banks had, however, only reached about two-thirds of the peak figure of their holdings of *governments* by the end of 1922.

[5] The figures of June 30, 1928, after which they declined for about 2 years, were 17.8 billions for All Banks. Investments of All Member Banks were about 6 billions in 1921 (June 30) and nearly 10.76 billions in 1928; 10.05 in 1929.

the elimination of that descriptive trend, indicates that the former must have retained something of their old role. We will add the complementary fact that members (in our sense) also conformed to the prewar pattern in that they continued to look primarily after their customers' credit and to make it, even at temporary sacrifices, the pivot of their business.[1] No grasp of banking developments in the twenties is possible unless this be clearly realized.

But that descriptive trend in investments is entirely due to the three spurts in 1922, 1924, and 1927, which are obviously associated with the three major buying campaigns of the reserve system.[2] It should be noticed, however, that this relation is complicated by a number of other factors, and also that only in the second case did the action of the Federal Reserve Bank of New York precede the purchasing operations of member banks. In the two other cases the latter moved first, which should be sufficient to convince us that these spurts contained an element which was independent of Federal reserve action: this action supplied an additional impetus and additional liquid means, but was not the sole *causa efficiens*. This is also corroborated by the fact that the net result of the reserve system's major dealings in governments, from January 1922 to October 1929, was minus 65 millions.[3] Nevertheless, it was one important factor[4]—the second or, if we count the war effect, the third—in shaping members' investments.

The third or fourth factor is the most interesting one. It consists of the conditions of the banks' customer business adverted to above, III, *b*. When banks in and after 1922 saw this business floating away from them on the tide of abundant money, they did not, strictly speaking, acquire a new motive to look to investments for a permanent—*i.e.*, more

[1] Member banks (in the official sense) are, since October 1928, required to give information which enables us to distinguish customers' from open-market loans. This information, published in the *Bulletin* and the *Annual Reports* of the Federal Reserve Board is very revealing and has been drawn upon in what follows in our text. The point which is material at the moment is that banks did not turn to temporary investment in the open market at the expense of their loans to customers when this was more remunerative, as it was in 1929. This implies that selling and purchasing bonds must also have been, for them, secondary or subsidiary to customers' loans.

[2] But *cp.* the discussion of the *modus operandi* of open-market operations which follows below, sub V.

[3] There is always a danger of overestimating the causal role of Federal reserve purchases, since the system would naturally buy in a situation in which member banks, finding their funds idling in their hands, would increase their investments independently of any action by the system. This will presently become still clearer.

[4] The present writer entertains a profound respect for any opinion held by that great economist, A. A. Young, and records dissent with reluctance, but he cannot understand how Young can have held (*op. cit.*, p. 59) that the open-market purchases of the Federal Reserve Bank of New York "appear to have no distinguishable effects" on the amount of government securities held by New York national banks.

than temporary—source of employment for their deposit manufacturing facilities, for as we have seen, this situation was not absent from the prewar picture. But the old motive gathered additional weight. And so they increasingly took to holding and handling bonds, outside banks in particular other than government bonds, which they acquired steadily even in 1923. The holding provided a return which, though not very attractive and falling, was supplemented by capital gains and gains from the handling, especially the placing. So, while still regulating their course in the way described above, they systematically bought more when buying than they sold when selling and this is the fundamental explanation of the descriptive trend we observe. But it also bears on fluctuations and on the relation of this series to others, for inasmuch as the method of financing industrial and commercial requirements by the issue of new or by the sale of old bonds was increasingly resorted to on the initiative of industrial and commercial concerns, *i.e.*, inasmuch as it increasingly took the place of direct borrowing from banks, a component was inserted that would be positively and not negatively associated with cyclical phases. We have observed this phenomenon in our survey of prewar times but it became much more important during the twenties. We shall expect it to assert itself especially in the holdings of other than government bonds. So it does—for outside banks it seems to correlate with business, for New York banks, with speculative activity,[1] as it should. And this explains much of what is unsatisfactory in the negative association referred to above.

But this negative association was only weakened and not destroyed by that component. So far as it was not, we shall expect some covariation between investments and time deposits, since investments due to the initiative of banks are likely to create idle deposits and idle deposits are—in spite of the qualifications following from our discussion above—more likely to be placed on time account than are others. Time deposits increased at a much greater rate, which accords with our theory that they do not primarily consist of idle funds, but represent a new way of handling certain classes of circulating funds, as does the fact that the logarithmic ratio between investments and time deposits almost steadily declined. But still there is more than a suggestion of covariation, as especially in New York figures for 1921–1922 and for 1924. This is what remains of the grossly erroneous theory that banks invest the time deposits with which they are "entrusted" by savers. We know that

[1] It has been observed by A. A. Young (*op. cit.*, p. 58) that the security holdings of New York national banks display a variability and quickness of response greater than those of outside national banks. "The way in which that [the New York] market serves as a distributing center, holding securities temporarily until they can be absorbed elsewhere, is reflected in the character of some of the fluctuations." This also applies to 1927 to 1929.

there is at best fractional truth in the implied relation between time deposits and savings and that a bank as a matter of principle[1] can no more be said to lend or invest a time than a demand deposit, though to the banker, provided he adheres to the old phraseology of his trade,[2] it may well look as if he did. Moreover, governments were among the most liquid of assets and the argument that it would be bad banking to buy them—or any bonds—except so far as they are balanced by slow liabilities, sounds strange indeed when it comes from bankers who felt no compunction when entangling themselves in mortgages.

A number of additional points would have to be dealt with in order to complete the picture. We confine ourselves to a few of the most important ones. First, banks improved their balance sheets by increasing their capital. This conversion of deposits into bank stock must always be kept in mind in any study of the behavior of deposits and in discussions about the presence or absence of "inflation." It will, however, suffice to notice the increase which occurred between 1917 and 1921[3] and which parallels other efforts to normalize their status in 1919 to 1921, in particular the partial liquidation of investments. Second, the Federal Reserve Act was bound to change the relation between pure member banks (our sense) and member banks that also filled central bank functions and, as far as the former are roughly represented by outside and the latter by New York banks, to affect the relations between these two groups. Nevertheless, these relations persisted rather more than we might have expected: the New York correspondent retained to a considerable extent his role in the operations of the banks outside.[4] But the transfer of reserve deposits to the Federal reserve banks affected interbank deposits. The prewar relation between deposits in New York banks and money in all banks is no longer observable. Something is left of the prewar relations between New York and outside net demand deposits and between New York and outside loans and

[1] The case of loans on account of others will be mentioned later on.

[2] The same excuse cannot be pleaded for theorists who in all other respects have absorbed the theory of "credit creation." To retain that vestige of old doctrine is in fact quite illogical.

[3] Capital and surplus of national banks stood at 1,845 millions in 1917 and that of other banks, excluding savings banks, at 1,953 millions. In 1921 capital and surplus of national banks had risen to 2,300 millions, capital and surplus of other banks to 2,720 millions. But increase continued and in 1928-1929 helped to enhance the banks' lending power: capital, surplus, and undivided profits of member banks increased by about 2 billions from 1922 to 1929, which item plus total deposits, of course, about equals the increase in loans plus investments plus reserves.

[4] This is shown by the fact, among other things, that rediscounting with correspondents (New York and others) went on, though on a modest scale, throughout the period. See on this and cognate points S. E. Harris, Twenty Years of Federal Reserve Policy, vol. II, App. C, especially the chart on p. 773.

discounts. Other points have been noticed already. Third, though the new organ of central banking and its policy will be discussed later, its influence on the behavior of banks must be glanced at now.

It was to be expected that the presence of so accessible a source of additional "funds" would have saved member banks much of their trouble about liquidity and, hence, profoundly changed their policy. In the argument of mechanistic theories about the regulation of the "supply" of money, the assumption that it did forms, in fact, an essential link. And the growth of real estate loans and other symptoms actually point in that direction.[1] But, no matter whether by compulsion from the federal reserve authorities, by tradition, or by perception of the long-run advantages of the observation of "sound" principles, the banks yielded to such temptation as there was much less than one might think. To be sure, their behavior varied greatly, especially as between first- and second-rate institutions.[2] The recurrence in the Federal Reserve Board's annual reports of passages suggestive of difficulties with banks which tended to lean on the snaffle in order to increase their working resources or at least to profit from differences between open-market and rediscount rates, is no doubt significant. On the whole, however, there cannot have been very much of this. The modal and still more the high-class bank did not relish being indebted to its reserve correspondent and was usually anxious to reduce its debt.[3] Looking, as has been remarked above, primarily after its customers' business, it *more majorum* so regulated open-market commitments and investments as to be able to finance it without falling back upon rediscounting save in exceptional circumstances. This can be seen clearly only since October 1928, when the necessary information first becomes available: in the last year of the period member banks in the aggregate actually increased their customers' loans, while at the same time paying back that increment of debt which they had incurred at the reserve banks in the first half of 1928, and they achieved this, until October 1929, in the face of the

[1] In this connection it should be mentioned, however, that member banks' reserve balances increased, January 1922 to January 1927, by nearly 560 millions (though "Federal reserve credit outstanding" declined by 140 and currency in circulation increased by 375 millions) largely as a result of gold imports. Reserve balances were (monthly average) 1.742 billions in 1919, 1.655 billions in 1921, and 2.375 billions in 1929. Some authors regard this increase of about 700 millions as the pivotal figure in the monetary processes of the period, in particular as proof positive of the presence of "inflation."

[2] Since the largest banks happened to be located in New York, that difference may, roughly and in the aggregate, be said to correspond to a difference in behavior of New York and outside banks. See L. Currie, *op. cit.*, pp. 91 *et seq.*

[3] In the case of New York banks, increase in indebtedness is, in fact, regularly followed by a decrease in net demand deposits, as Dr. Currie has pointed out (*op. cit.*, p. 93). But it must not be forgotten that there are also other reasons, originating in the cyclical rhythm, which would tend to produce that result, irrespective of reluctance to being in debt.

reserve banks' sales of governments, by reducing their loans to brokers and their holdings of acceptances and commercial paper, though the simultaneous influx of gold greatly helped. But the behavior of rediscounts (see below) suggests that the inference may be generalized so as to cover the whole period.[1] It follows that banks, assisted no doubt by exceptionally favorable circumstances, were never "loaned up" except in the irrelevant sense of that phrase which includes secondary reserves. In this irrelevant sense they may have been much of the time, though even in the first quarter of 1929 there were small excess reserves. They never were loaned up in the relevant sense, *i.e.*, in the sense that without open-market operations they would have been embarrassed by a customer asking for a loan. We therefore conclude that member-bank practice and hence the meaning of member-bank figures after all differed less from prewar patterns, and that the figures are more amenable to interpretation in terms of the processes embodied in our model than we might have expected. This must be borne in mind when we try to appraise the role in the processes of the twenties of the increase of nearly 700 millions (1922 to 1929) in the reserves of all member banks, or of the increase of about 11.5 billions in their total loans plus investments.

d. Discussion of the struggle of German banks with peculiarly German postwar conditions would present many points of interest but would not add materially to our understanding of the postwar cyclical process. The most important feature, foreign credits, has been fully dealt with earlier in this chapter. These, of course, powerfully influenced the behavior of "deposits and circulation" (Chart XL), which also reflects gradual return, after inflation, to normal habits of holding balances and the Juglar phases. "Creditors" in leading banks (only very roughly comparable to demand plus time deposits in the United States), which had been as low as 3.8 billion reichsmarks in 1924, rose to about 12 billions in 1929 but there is, under the circumstances, nothing remarkable in this increase and, in particular, no indication about the rate of saving; if anything it indicates disproportionate expansion of monetary purchasing power. The *Debitoren* in current account, with which we include advances and bills held (this is very roughly equivalent to all other loans), increased steadily, though with the expected variations in rate, from a little over 3.3 billions in 1924 to nearly 9.4 in 1929 and show that orthodox bank credit did not in Germany lose nearly so much ground as it did in this country. The same can be inferred from the

[1] The above is perfectly compatible with some covariation between rediscounts and outside loans and discounts which, but for open-market operations, would be still more clearly marked. They rose together in the postwar boom, fell together to the middle of 1922, rose together in the revival of 1922–1923 and then again in 1925 and 1928. Only 1924 shows marked, 1927 a less marked, divergence that is easily accounted for.

series, which continued to be of fundamental importance, of Bills Drawn, although their share in the total of credit outstanding rapidly declined.[1] Money in circulation also displays a rising tendency to 1929 but surpassed the 1913 figure only insignificantly in that year. Other aspects will be noticed later

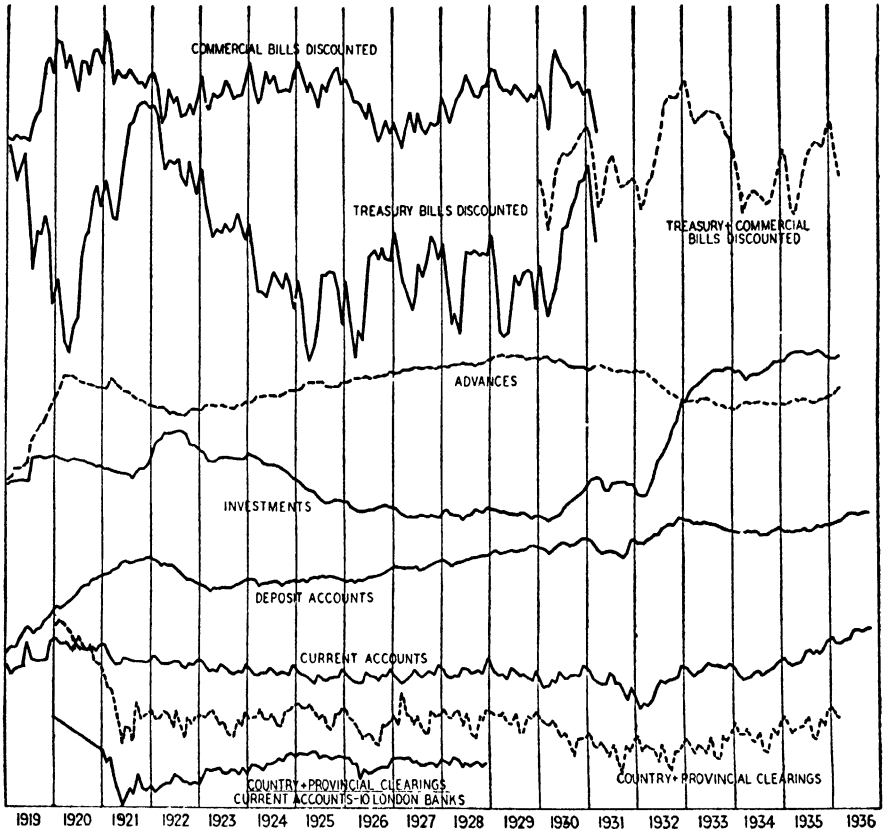


CHART LI.—London clearing banks' figures (see Appendix, p. 1073).

All that it is essential for our purpose to observe about the English case can be seen at a glance in Chart LI.

The striking difference between this picture and the American and German ones, due to the "classic" lines of the former, needs no comment beyond a reminder that those lines were the result not only of the monetary and fiscal policy pursued but also of properties of the English economic process which were completely independent of them. Treasury

[1] The amount of bills held by banks increased almost steadily whether the total increased or decreased. This shows, if proof be wanted, how very liquid they were all the time.

Bills Discounted have been inserted in order to avoid missing the fact that public financing was throughout the central factor in the money market around which everything else turned. Advances display a most orthodox inverse covariation with investments, which during the period never acquired the significance of their American counterpart. Be it repeated that *current accounts*[1] *kept up in* 1920 *and the first half of* 1921, while a clearings figure which is supposed to parallel American outside debits declined to a new and very stable level. Moreover, they display but the most gentle suggestion of cyclical fluctuations: Juglar phases are just recognizable in the fact that they slowly fell to 1925, then ceased to fall, and in 1927 and 1928 slightly rose. It is, however, interesting to note that, as indicated by the curve at the bottom of the chart, that slow decline is not paralleled by clearings, the indicators of monetary business volume, and hence cannot have greatly affected business processes.

IV. The partial description of the monetary aspects of the investment process in the twenties, which is implicitly contained in the analysis just presented (III), must now, in some points at least, be made explicit and also supplemented by other data from the financial sector, mainly the stock market.

a. For this purpose it is first of all necessary to insert into the picture the phenomenon which so much increased in importance during the first postwar decade—everywhere, but in particular in this country—Temporary Investment.[2] We have seen that industrial concerns which happen to hold owned funds[3] in excess of what they require at the moment—for instance, undivided profits or proceeds from the issue of bonds or stock—insurance companies, public bodies, wealthy individuals in the act of shifting their investments, often find it convenient to acquire quick assets of the type that banks acquire for secondary reserve purposes, or even assets which a bank could and would not buy for this or any other purpose, and so to take, for a time or regularly, a hand in the game of the open market. Instead of buying such things as acceptances, treasury bills, or even bonds, they may, of course, also lend in the term's most narrow sense, *e.g.*, to bill brokers or stockbrokers. The way in which this special case of temporary investment affects the situation of banks does not differ from the way in which it would be affected by the pur-

[1] As has been mentioned before, the English distinction between current and deposit account seems to the writer to be somewhat more significant than the American distinction between demand and time deposits. This is why for the curve at the bottom of the chart clearings are divided by current accounts only.

[2] The term is to be understood in the technical sense given to it in Chaps. III and XI.

[3] Though confining ourselves to owned funds, we should remember that the phenomenon itself is not necessarily confined to owned funds in our sense. It should also be remembered that there is no contradiction in saying that, say, an insurance company practices *temporary* investment *permanently*.

chase of bonds; in fact, we may usefully call the transaction "buying a loan." If the loan bought has already been in existence and "owned" by the bank which holds the deposit to be thus invested, then this bank's deposits and loans are reduced by equal amounts so that the pressure, if any, on its cash or its reserve deposit is, *ceteris paribus*, relieved and its lending power increased.[1] The banking system's aggregate lending power is also increased and we may say that existing deposits now go further or that their "velocity" rises. If the loan did not exist before but has been newly created by the transaction, the recipient being still assumed to bank with the same bank as the lender, the bank's deposits and loans are not affected and its lending power is not increased.[2] If either the purchase of the preexisting loan or the emergence of a new one leads to the transfer of the corresponding amount of the investor's balance to another bank, as in the United States it mostly would, we get an additional feature which for the investor's bank is in the nature of a shock. There are several obvious ways to absorb the latter, such as using elbow room the bank may have been sensible enough to preserve, or borrowing at its reserve bank or from the receiving bank. Moreover, in the case of actual transfer of reserve balances, the status of the receiving bank will be improved and its lending power increased, normally by the same amount by which the paying bank's lending power is curtailed. But no generalization about this can have any realistic virtue. Net contraction of aggregate loans in the banking system is perfectly possible, especially if the transfer happens to be from a bank in a strained position to a bank in a comfortable one, though even in this case the ultimate effect for the economy as a whole will be much akin to that of an expansion of bank loans.

So far we have dealt with temporary investments or, to take the special case, loans by nonbanks within a closed economy. The logic is no different if newly imported funds are used for the purpose, but there is a practical difference in the complex of effects if immigration of those funds entails an addition to member bank reserves. Let us imagine, in order to illustrate this point, that a foreigner (in the twenties) dropped from the sky with the equivalent of a million dollars in gold which he had salvaged from oppressive taxation or anticipated political trouble in

[1] *Cetera*, however, need not be *paria*. But assuming that the bank is now able to make additional loans, it is worth while observing that, in this as in some other cases, decrease in deposits will be accompanied by increasing ease in the money market and a tendency for money rates to fall. This otherwise trivial observation acquires some importance in the presence of theories that associate rise and fall in deposits with falling and rising tendencies in interest rates.

[2] It might be said, however, that it is potentially increased, if the recipient of that loan would otherwise have applied to the bank, a very realistic case: his impending application being warded off, the bank can now view other applications more favorably.

some other country, and that he therewith acquired a balance in some member bank. This, of course, would swell that bank's reserve with its Federal reserve bank, and whatever the depositor does with the balance he acquires—we may well imagine that he will invest temporarily until he has recovered from his fall—the effects of the incident increase in bank reserves will overshadow any effects his action may have.

The motives of temporary investors are clear. There are, however, also motives for them to use their banks as intermediaries—motives of technique and others: the bank may, for example, be a useful screen. Banks complied in the first place because they had to. Temporary investors are, of course, competitors and their very presence was a symptom of the weakness of the banks' control over the financial structure. But in the second place, a bank stood to gain more than the commission by having the placement of such funds left to it. In particular, it could then use them in order to relieve its individual position and also in order to finance purposes in which it may have been directly or indirectly interested without caring, in times of active criticism, to sponsor them too publicly *suo nomine*. So cooperation was indicated. It did not alter the *modus operandi* of these loans, but it entailed the statistical consequence that they were now reported as Loans on Account of Others. Since they were mostly directed toward the stock exchange, they showed up as part of Brokers' Loans,[1] while banks gave another part on their own account, as a matter of their business routine.

Another remark will complete the theory of this special case of a special case of Temporary Investment and, incidentally, our discussion in Chap. XIII, Sec. D. In practice, a stockbroker must not only have assets of his own but also keep a good bank balance. We may, however, assume that he will borrow part of this balance against his other assets so that his mere readiness to do business will produce some brokers' loans. If speculators now do what in Chap. XIII we have called "buying themselves in," *i.e.*, transfer to brokers certain sums to start their margin accounts—they need not do this, however, but can deposit securities instead—these sums, though they may also be borrowed, will diminish the total of brokers' loans. The aggregate of the remainder will not change when brokers thereupon get busy with executing orders to buy or to sell.[2] For though individual brokers will have to borrow in order

[1] That part includes, for any individual bank, also what it thus lent on account of other (out-of-town) banks. The behavior of this element was in between the behavior of brokers' loans on account of nonbank customers and of brokers' loans on the lending banks' own account. Our argument primarily refers to the two latter categories.

[2] This point is overlooked surprisingly often. The writer is not very familiar with the literature of stock exchange operations, but as far as he knows, credit for stressing it is due to Mr. W. J. Eiteman, Economics of Brokers' Loans, *American Economic Review* for March 1932.

to replenish their own deposits as soon as they meet with an adverse balance on the day's transactions, other brokers must, *ipso facto*, acquire a favorable balance which *up to the amount of their indebtedness* will reduce brokers' loans by as much as they have been increased by the borrowing of the buying brokers, unless it be withdrawn by customers. It is true that this will be done very promptly, especially if the sellers are not speculators but either the issuers of the securities they sold or outsiders without margin accounts. Nevertheless, it is neither buying nor holding as such that brokers have corporatively to finance, but withdrawals or, as we may also put it, *conversion of balances with brokers into balances with banks*. Hence, although brokers' debts are technically incurred in order to service customers' *debts*, aggregate brokers' loans can in general only increase through conversion of customers' *claims*.

This conversion might create a very awkward situation. The constant threat of it is, in fact, one of the brakes that are essential to the normal working of the money market mechanism. But if a large amount of owned balances stands ready to "buy" the claims against brokers,[1] new balances need not, to that extent, be created, and speculators' original deposits with brokers plus profits or minus loss can be piloted into the channels of consumers' and producers' expenditure without for the time being causing any disturbance—to the banks or anyone else—except so much as is implied in hitherto idle deposits becoming active. We cannot follow up the interesting implications of this argument, but it should be observed that it almost completely disposes of the theory—held not only by politicians and popular writers but apparently also by some economists and the Federal Reserve Board—that brokers' loans during the twenties absorbed funds that "legitimate business" was supposed to need sorely. On the contrary, brokers' loans were a means of, as it were, coining speculators' gains and injecting them into the stream of economic life. They might, therefore, be called "inflationary" in an obvious sense of that term. And an argument against them can be forged from that.[2] But this does not save the other.

It is in this light, as a concomitant or vehicle of realized speculators' gains or of stock issues, that we must look upon brokers' loans. They increased strongly in 1921–1922, 1924–1925, and 1927–1929. But what

[1] For that is what lending to brokers comes to. From the standpoint of banks, however these loans are newly created. It should be borne in mind that the argument applies equally, with little modification, to the case in which the sellers are the issuers of the stock as to the case of transactions in "old" stocks.

[2] See Chap. XIII, Sec. D. It is, in fact, not farfetched to surmise that this is what the Federal Reserve Board meant when it tried to fight speculation. It may also have resented having its wires crossed by lenders beyond its control and having to listen to bank executives declaring in reply to admonitions that these lenders were as independent of them (the executives) as the man in the moon, which, of course, was not quite so.

banks contributed on their own account was not only comparatively steady—around 1 billion even during the last three years[1]—but actually tended to decline through the greater part of 1928 and, after a strong rise in the last quarter of that year, again during the first half of 1929. The spectacular ascent in 1928 and 1929 to almost 7 billions was entirely due to loans on account of others, which from the beginning of 1928 to the maximum in 1929 rose from about 1 to nearly 4 billions.[2]

b. We will now inspect Chart LII.

Bearing in mind the argument just presented, we shall not interpret the covariation between brokers' loans and prices of industrial stocks, obvious and understandable as it is, in the usual way, *i.e.*, in the sense that the abundance of funds available for stock exchange operations was the initiating force of the boom: in part, especially in the case of foreign funds, it was, if anything, the consequence of it. The relation, however, is more complicated than that. The initiating force was, as always, industrial success. But the abundance of money was a condition for speculators' finding it so easy to convert gains into balances and for concerns' being able to sell such quantities of new securities at high prices. Relending part of the proceeds, which in the last years were much above immediate requirements, in turn increased brokers' loans. This practice further helped to relieve banks of the pressure which conversion would otherwise have put upon them, and to paralyze for a time the brakes of the engine. Conversion thus facilitated further conversion instead of impeding it, as it would normally do, and abundance of "funds" created additional abundance.

We may note that these "funds" would, on their way to and from, not necessarily but frequently pass through time accounts—thus effecting the utmost economy in the use of demand deposits—and that converted funds—or funds created by conversion—which were neither redirected to brokers nor immediately applied to financing consumption or real investment would regularly be placed on time account. This is the only nontrivial relation between time deposits and stock prices, *i.e.*, the only relation which means more than that both happened to increase under the influence of environmental conditions common to them. And it has nothing to do with the investment of savings; hence, cannot verify any theories about it.

The above analysis may be translated into terms of money rates. The theorists who establish, via the rates of interest, a simple causal

[1] A sharp rise, followed by a still sharper fall within a few weeks, occurred, however, in the fall of 1929 (see next footnote). The figures given are those of New York City member banks, also for the loans on account of others.

[2] The remainder consisted of loans on account of out-of-town banks. The 7 billions refer, it should be remembered, to reporting member banks. The grand total was, for September 1929, about 8.5 billions.

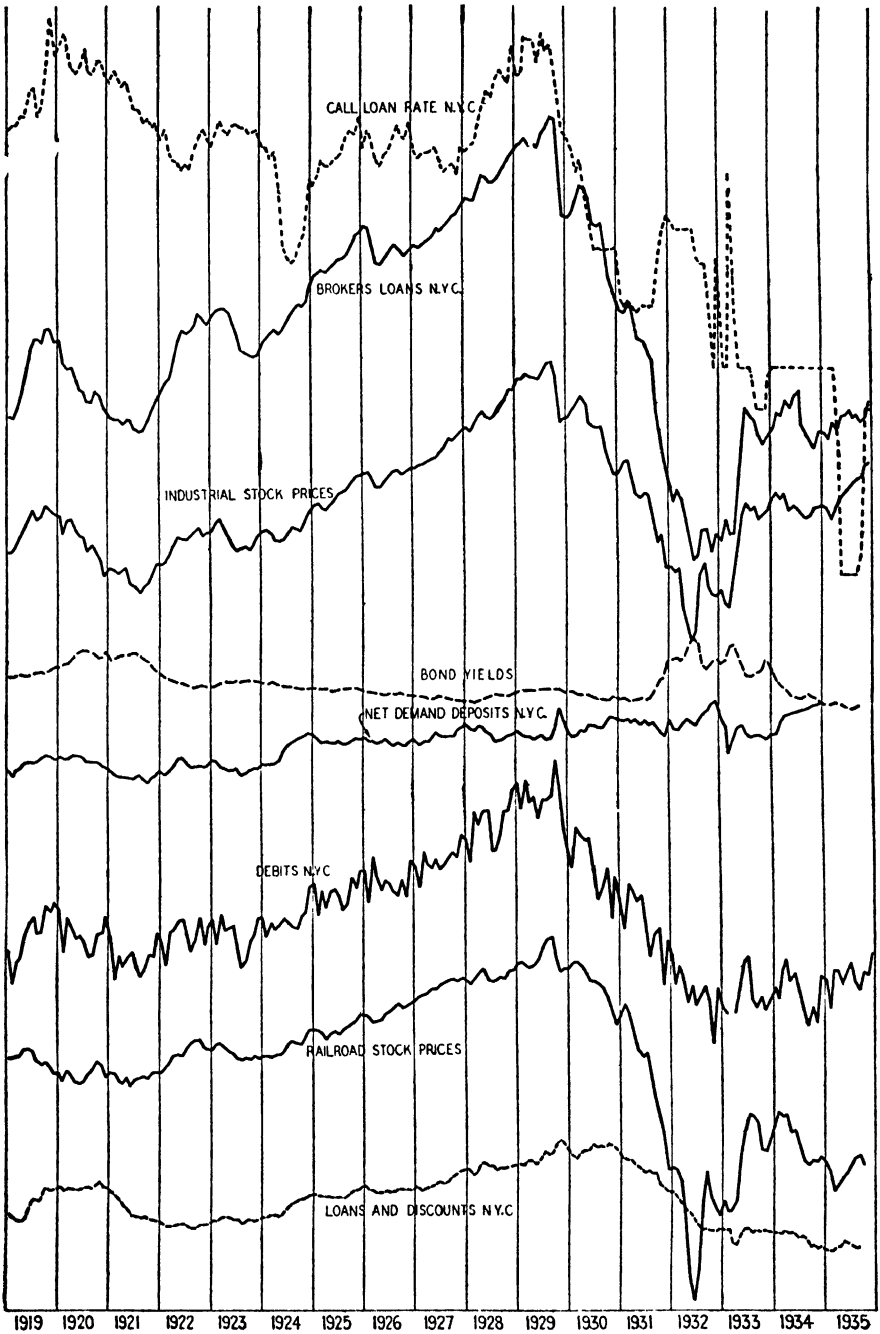


CHART LII.—United States (see Appendix, p. 1073).

connection between abundant money and booming stock markets cannot glean much comfort from the course of events in the twenties. It is true that the mechanism described kept money rates lower than they would otherwise have been. But the struggle for conversion, though facilitated to the utmost, all the same asserted itself in a relatively high call rate, which did not, however, spell tight money all round. As to the first point, we observe that only to the end of the first quarter of 1925 call rate kept anything like its regular relation to other open-market rates, especially the commercial paper rate, *i.e.*, the relation which would follow from its place in the structure of the banking business. Till then it was indeed (almost) consistently lower, reaching its (monthly) trough for August 1924 when it was 2 per cent, while commercial paper rate still stood at 3.25. But afterward it was (almost) consistently and increasingly higher, the difference reaching a maximum (3.71) in March 1929. The presence of a stimulus to speculation from low rates could hence—even if we waive theoretical objections—be averred only for the second part of 1924. As to the second point, open-market rates, of course, fluctuated together. And, as we have seen (Chart XLIV), interest on customers' lines of credit increased in 1928–1929 by, on a rough average, 1 per cent. But, as we have also seen, no restriction took place in that quarter.[1] Bond yield reacted but moderately (see chart). And money raised by the issue of stock was never so plentiful. The "strain" of 1928 and 1929 was substantially confined to the stock exchange. It came to a head, as it was bound to, through the retreat rather than the exhaustion of the funds which financed brokers' loans and which through them, in the way indicated (see above, sub *a*), served the purposes of speculators and issuers, while at the same time they were by their owners (other issuers among them) earmarked and counted upon for other expenditure. In the end, fright may have been what turned retreat into rout. And that fright may have been partly motivated by the perception of absurdly high stock prices and may thus link up with the fundamental fact that the economic process was heading toward

[1] It might be replied that an increase in the interest charge *is* restriction. What the statement in the text means is, first, that banks did not restrict loans to business. As has been pointed out, they increased them and were enabled to do so by various favorable circumstances and by their own action, *i.e.*, by reducing their open-market commitments. Second, we hold that in booming conditions a 1 per cent increase in interest charges does not induce significant restriction of business operation. Perhaps, in strict logic, it should; but it does not. The economic world is no billiard table. What, then, did that increase mean? Nothing except that banks will increase their charges if circumstances give them an excuse for doing so. The monetary strain of 1928 and 1929 is pure moonshine. Or rather, he who speaks of strain betrays that, when speaking of business, he is thinking of margin accounts. When in 1929 the funds of "others" took fright, the New York reporting member banks stepped into the breach so as to increase their demand deposits by nearly 1.6 billions. How could that have been done if there had been any strain beforehand?

depression. But the situation in the stock market was untenable independently of all that. Precisely if business had gone on booming, the nonbank lenders would themselves eventually have needed their funds. The pyramid of loans on account of others, and stock prices with it, would have had to come down for this reason alone.[1]

Some minor points in the picture may be noted. Prices of railroad stocks increased materially less than the prices of industrials. Yet the writer, being unable to see anything but gloom in the situation of railroads, finds it difficult to understand why they should have risen as much as they did. New York debits reflect the transactions of the stock market well though, owing to obviation and the fact that its relative importance is bound to increase in consequence of an increase in the total of transactions, on a progressively reduced scale. Temporary investment—brokers' loans, in particular—explains the quiet behavior of New York City bank loans and net deposits.

No great value attaches to the data about issues for the purpose of securing new capital, embodied in Chart LIII.

We may, however, note a few significant features. There is, first, the ominous increase in the flotations of securities of investment trusts and financial and trading companies since 1926, which reflects the doings of the last three years of the period and teaches much about the specifically American characteristics of the great crisis. The role of the Land and Buildings group should next be noted—much of it was of a similar type and no less indicative of troubles to come. Third, the industries that carried the third and fourth Juglars are mostly represented, as we should expect, though some of them very modestly. Public utilities stand out as the great consumer of capital. Fourth, if we discard the classes that directly link up with the mania, we see the rise of the fourth Juglar clearly indicated. If it was not more so, this was due to the fact that, as stated before, concerns took advantage of the opportunities the stock markets offered to them 1928–1929, even if their immediate investment programs did not require any outside financing.[2]

[1] The argument will be developed from another standpoint in V. The reader should note both the superficial similarity and the fundamental difference between that argument and the Karsten theory, see *Journal of the American Statistical Association* for December 1926. Also *cf.* Persons and Frickey, Money and Security Prices, *Review of Economic Statistics* for January 1926. Professor Bresciani-Turroni's important contribution should again be mentioned: Considerazioni sui Barometri Economici, *Giornale degli Economisti* for January, May, and July 1928. Finally, comparison is invited with the analysis of the boom by Professor Lindley M. Fraser, *American Economic Review* for June 1932.

[2] The evidence of the chart may be usefully compared with the increase in total long-term debt. That of railroads was 11.9 billions in 1922 and 13.4 in 1930, that of utilities was respectively 8.4 and 14, industrial long-term debt increased from 6.8 to 10.8 (U. S. Dept. of Commerce, Long-term Debt in the United States, p. 6).

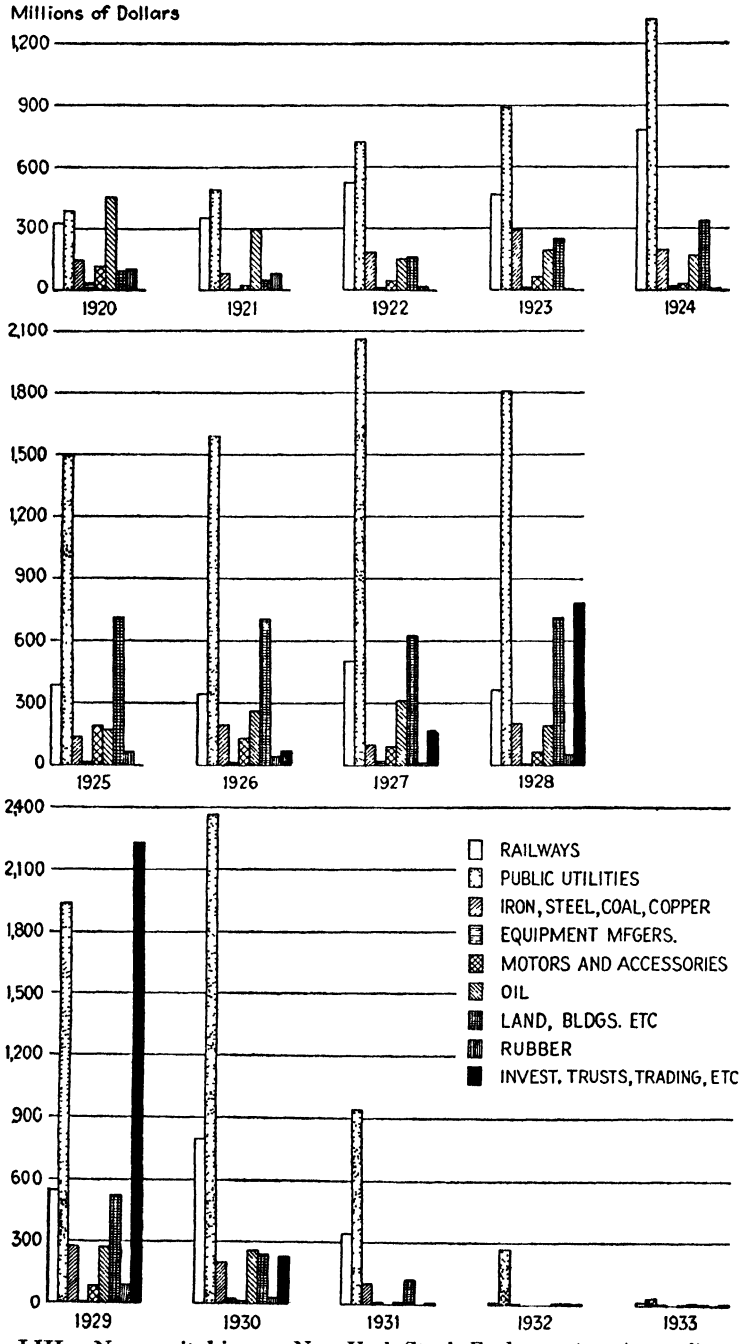


CHART LIII.—New capital issues; New York Stock Exchange (see Appendix, p. 1074).

An investigation made in order to get at figures more relevant to the processes of real investment,[1] reveals the fact that in 1929, out of the total of public issues by domestic corporations, which amounted to nearly 9.4 billions, *at the most* 2 billions can have been (directly) for the purpose of providing real, or "nonfinancial" or "productive," capital,

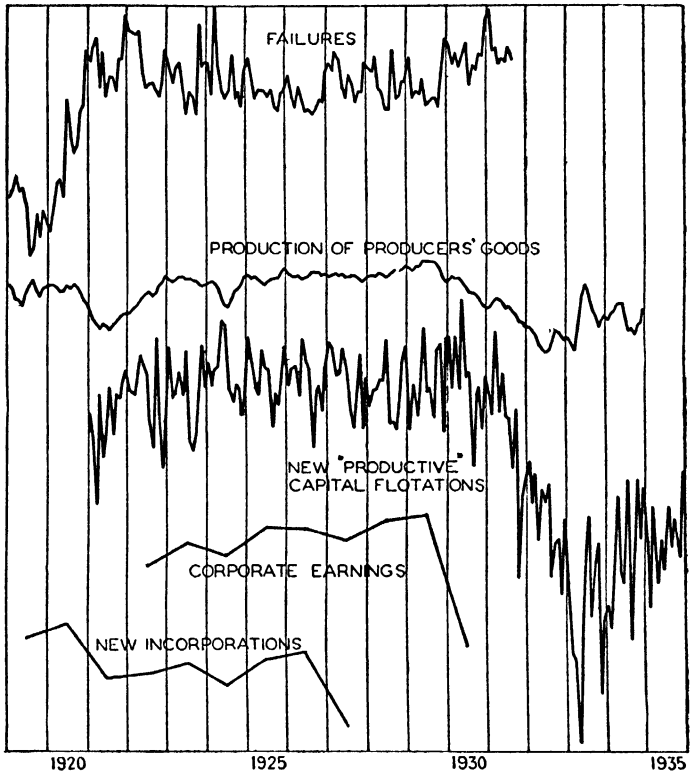


CHART LIV.—United States (see Appendix, p. 1074.)

and even these 2 billions include issues for providing working capital, the greater part of the issues of installment finance and real estate loan companies and issues the purposes of which were so ambiguously stated as to make inclusion or exclusion a mere tossup. One of the results, however, was to strengthen confidence in the reliability of the series

[1] It soon proved too laborious to be extended beyond the year first tackled, 1929, but has been published recently. See George A. Eddy, Security Issues and Real Investment in 1929, *Review of Economic Statistics* for May 1937. Perusal of the appendix of that study will introduce the reader to the difficulties of the problem. Issues for the purpose of repayment of bank loans have been considered as "productive" if those loans themselves were productive *and not older than three years.*

of "productive" issues published by Moody's Investment Survey.[1] This has, accordingly, been used in Chart LIV.

The order of magnitude of, and the cyclical fluctuations in, these "productive" issues are highly interesting and in themselves sufficient to dispel many errors about the investment process of the twenties. The annual figures rise from 864 millions in 1921 to 1,941 millions in 1924, *the maximum for the period under survey* (though it was nearly reached again in 1930). Then they fall, the figure for 1928 being below that for 1924 by 446 millions. The influence of the speculative excesses of 1929 shows, but the figure for that year is still only 1,787 millions. This is much more like what we should have expected from our report on the industrial processes of the time. The perfect independence from the course of interest rates, bond yields for instance, should be particularly noticed. It would of course be hazardous to aver that these issues are a perfectly reliable indicator of investment in general— in fact, it is certain that corporate issues will in general differ in timing from other methods of financing real investment and also from the total of actual expenditure. There is anything but satisfactory covariation between them and the other series plotted on the chart.

c. Normality (conformity to our scheme) is what strikes us at first glance when we inspect the German chart (Chart LV).

We must make a partial exception for Foundations and Failures, which increase and decrease in 1928–1929 in a manner not in accord with other indices or with expectations. But call rate, though, of course, not absolutely lower than in the United States, normalized its position relatively to other rates in 1925 and later on the whole kept this place except during the first 7 months of 1927 and then again in 1929. The boom of 1926–1927 as reflected in stock prices and stock exchange transactions was part of the processes of the Juglar prosperity though, within it, it came later than is usual. After that we observe the decline, also in dividends and issues, which in a Juglar recession on a Kondratieff depression is the normal thing to expect. And in fact, although there was much trouble ahead, within as well as without the sphere of banking, the stock market as such never became a center of difficulties in the subsequent great depression. Yet neither ease in the open market nor loans on account of others were absent. The influx of foreign credits created conditions not dissimilar to those prevailing in the United States. The case from 1925 to 1927 was closely linked up with such loans, the pro-

[1] Vol. 25, No. 86, October 1933, p. 1671. This series excludes additions to working capital and thus, including substantially the items plant and equipment only, really serves our purpose better. With it, Moody's Survey combines another, which includes municipal and farm loan issues, which are also considered as productive. The total is what has been plotted, but the figures given in the text refer to (domestic) corporate issues only.

ceeds of the issue of industrial bonds and stocks—see chart; total domestic issues amounted to about 3 billion reichsmarks in the first 9 months of 1926—being partly used for the repayment of short debts to banks or for loans to the market. Correspondingly, the stock exchange loans of

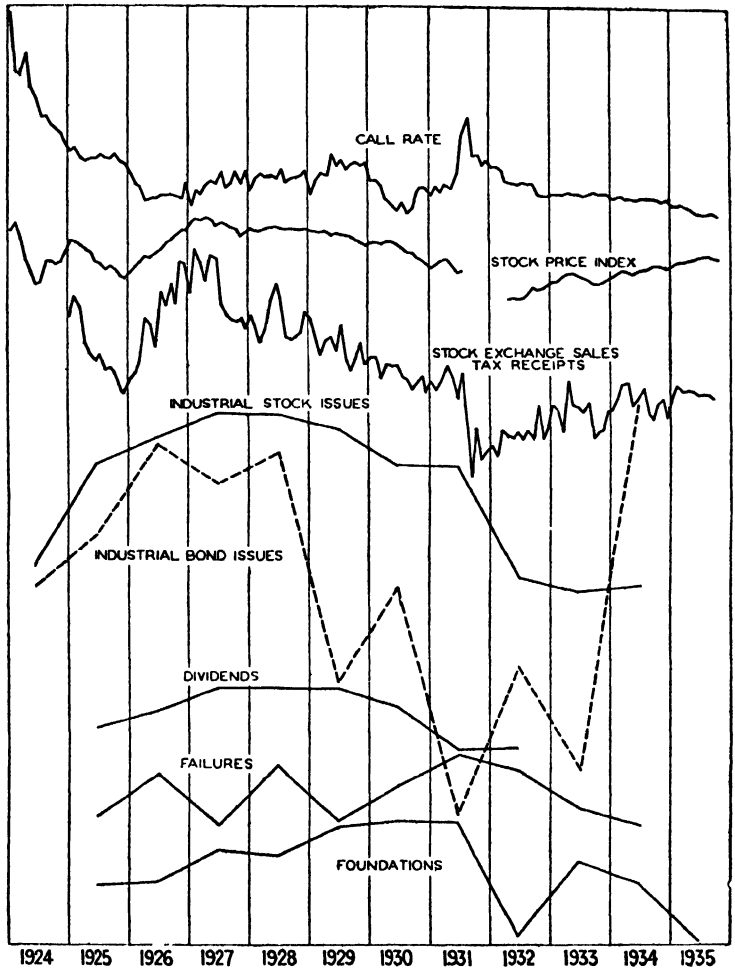


CHART LV.—Germany (see Appendix, p. 1075).

leading banks (Reports and Lombards), after increasing rapidly during 1926, reached a maximum of 1 billion at the beginning of 1927. But the Reichsbank which, throughout Mr. Schacht's tenure of office, energetically exerted what regulating influence it had, really meant business. And the severe lesson administered to speculation in 1927 proved sufficient to stop the upward cumulative process and to prevent its recrudes-

cence for the rest of the period, hence a crash of the American type[1] at the end of it.

In the London stock market conditions of boom prevailed, almost without any setback, from the middle of 1925 to the middle of 1928, after which there were upper-turning-point hesitations for about one year. See Chart LVI.

This boom, normal within the cyclical schema and also reflected in "Town" clearings, deserves some emphasis because of the divestment by banks which accompanied it throughout (see Chart LI) and because of the fact that it followed upon the heels of the gold standard act. From our standpoint there is nothing to wonder at in this. As a matter of mechanism, however, it should also be observed that divestment corresponded in timing to the strong increase in the London clearing banks' loans at short notice to the stock exchange. Moreover, although there are a number of shortest-run exceptions, the inverse relation of the movements in stock prices and in call rate is almost perfect. The short-money index[2] fell from its maximum of 163 per cent of the 1913 average

[1] This is all that the limitations of our purpose and the writer's wish to deal more adequately with American developments will allow him to say about the financial aspects of the German investment process and the policy of the Reichsbank during those critical years. In dismissing the subject, he wishes to add three remarks. First, in view of the host of abnormalities in the German situation, the normal complexion of the sector under discussion must, in fact, be largely attributed to the bold handling of the Reichsbank, though control was made easier by the factors which darkened the industrial outlook after 1927. Second, the policy of the Reichsbank no doubt presupposed not being afraid of timely use of bank rate. But, partly because bank rate is *never* the decisive element in any situation, partly because owing to the foreign credits it could not have had full effect in *this* situation, such use as was made of it was only of secondary importance. The latter difficulty, expressing itself in the unwieldy mass of loans on account of others, was never really overcome, though steadfastly fought. It is highly instructive for anyone, and should be even more so to believers in the key position of interest rates, to recall that in June 1927 the first reaction of the stock market to the decision of the Reichsbank to raise its rate from 5 to 6 per cent was a rise in stock prices, it being argued that this would draw foreign funds: "stocks firm on dear money" was the slogan of the hour. Hence, third, it was not by raising bank rate but by forcing banks to withdraw what corresponded to brokers' loans on their own account which did the job. It is true that the measure took effect so promptly because in Germany the loans on account of others were not, as a year later they were in the United States, almost exclusively directed toward the stock exchange. But it would have been effective even in this case. For however little banks may on their own account contribute, that little is of cardinal importance and its withdrawal would in general be quite sufficient for any desired degree of damping. This is not without some bearing on the responsibility of banks for booms not directly financed by them: the officers of a regular army may be entirely innocent of the excesses committed by irregulars over whom they really may have no control; but if they use however small a detachment of their regulars in order to provide rallying points for the irregulars, they can no longer decline responsibility.

[2] International Abstract of Economic Statistics, International Conference of Economic Services, 1934, pp. 105–107.

to 48 per cent of it in July 1922, then rose and kept well above that average during 1926. In 1927 it fell below it, however, and it was only in 1929 that, under the influence of New York events, it rose to anything like abnormal heights. The hesitations of the curve of stock prices set in while it was still falling and bank rate no higher than it had been

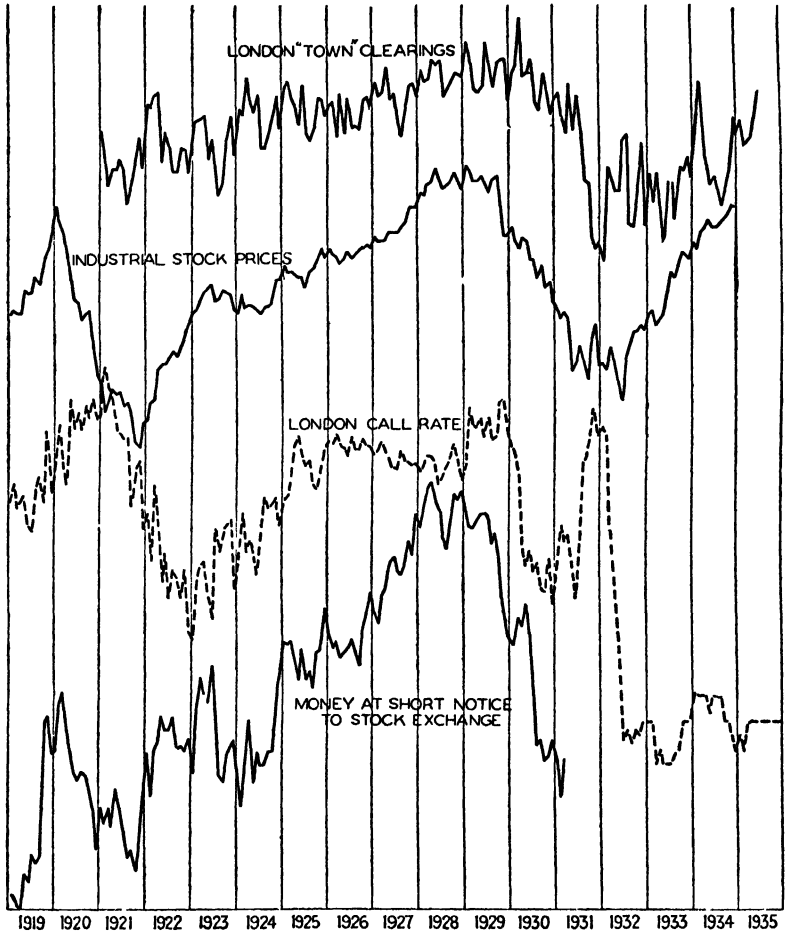


CHART LVI.—England (see Appendix, p. 1075).

through the boom. In what is an instructive contrast to the American case the subsequent crash, or as much of it as was not a repercussion from New York, was more a crash of unsound concerns (Hatry) than a breakdown of a structure.

To the policy of the Bank we shall return. But a graphic survey of flotations may be added here. The strict regulation of issues, which

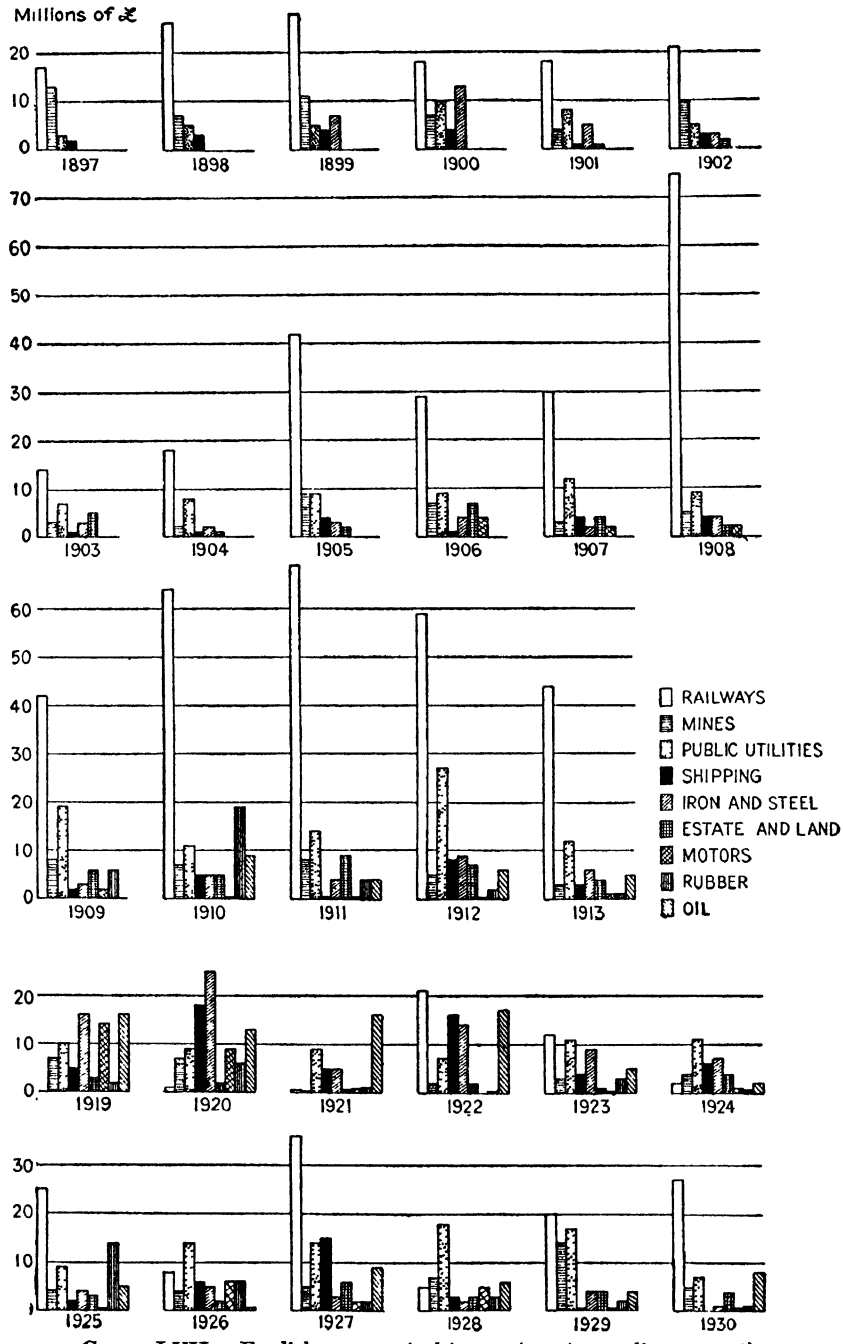


CHART LVII.—English new capital issues (see Appendix, p. 1076).

for part of the period amounted to prohibition, must of course be kept in mind. In order to show up the postwar features of the picture by contrast, the survey has been extended over the whole Kondratieff. The chart speaks for itself (Chart LVII).

The path that leads from the financial sector to real investment is tortuous and unsafe. Recalling, however, what has been said about the subject on various occasions earlier in this chapter, and once more accepting Mr. Colin Clark's guidance, we cannot doubt the broad fact that investment in the twenties was a much smaller percentage of national income than in 1907.[1] The expansion of production, which as we have seen was considerable, in fact took place along with a great relative decrease in real as well as monetary accumulation. To conclude from this that the rate of economic growth does not depend upon the rate of accumulation of "capital," is not more but also not less reasonable than it would be to conclude that output does not depend upon the degree to which resources are utilized. We know that change in production functions is more important than either. And one-variable relations do not work any better in this case than they do in any others. But considerations such as these are an unsafe basis for the conclusion which economists of the anti-saving schools would evidently love to draw from them.

V. *a.* That cross between European doctrines about banking and the exigencies of the American environment which is or was the Federal Reserve System,[2] was from the first endowed with, and in 1917 acquired additional, powers of expansion, little in accord with those doctrines. Circumstances too familiar to insist upon prevented them from acting on foreign exchanges, but in all other respects the "economy" of reserves effected[3] by the act and the amendment amounted to a

[1] National Income and Outlay, Table 84, p. 185. Mr. Clark's figures are 235 million pounds for 1924 and 255 for 1929. Overseas investment fell below the prewar level even absolutely. But his definition of Net Fixed Capital is much wider than ours. The figure that is relevant for us is more akin to Mr. Clark's Industrial and Commercial Capital Outlay, which was respectively 81 and 72 millions (Table 88, p. 193).

[2] The influence of a prominent banker whose thoughts on the subject were the product of German tradition—which, of course, means that in part they were also English—is clearly traceable. There are clauses in the act that are suggestive of the old *Reichsbankgesetz*—another instance of the truth that nobody disregards facts so completely as the theorizing practitioner, an instance also for the other truth that any enactment is eventually adapted by the environment.

[3] The "economy" was brought about, first, by direct reduction of reserve requirements, second by the concentration of member bank reserves at the Federal reserve banks. Estimates of the amount of the economy due to direct reduction would vary somewhat according to the hypotheses adopted as to the *modus operandi* of the measure. An estimate that has been widely accepted, that of the Federal Reserve Bank of Richmond, puts the average reserve requirements of all banks before the Federal Reserve Act at 21.09 per cent and after the amendment of 1917, at 9.76. The special reduction for time deposits first to 5, then to 3 per cent acquires enhanced importance if our view of the nature of time deposits

devaluation of the dollar. Like any devaluation, it might have remained dormant for an indefinite time. But the war made it effective in a way which should gladden the heart of the quantity theorists: from 1914 to 1920 deposits in All Banks approximately doubled—they increased from about 18.6 billions to about 37.7—and the BLS index of wholesale prices also roughly doubled between 1914 and 1919, which year, owing to the somewhat speculative character of many of the prices which enter into any wholesale price index, it is but fair to choose for a test.[1] The expansive power of the system was not, however, exhausted thereby. As evidence from time series already presented shows, it was perfectly up to financing at the new level of prices and values and, as has been pointed out before, able not only to stay as expanded by the war but also to expand further. Two additional reasons for this should be mentioned here.

First, the ratio between currency in circulation (outside the Treasury and All Banks) and total deposits "rose sharply in the two war years, but then resumed that fairly steady decline which goes back at least to 1893, and resumed it at nearly the same average rate of relative decline per year as before."[2] Evidently that process which we have dubbed the immigration of legal tender into banks and which was so important an element of the expansion of bank credit in the past, had not been completed. Currency outside of the Treasury and All Banks, as far as the annual figures reported by the Comptroller of the Currency allow us to judge, increased rapidly to a maximum for 1920 and then fell

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be accepted. The conversion of member bank reserves into deposits at the Federal reserve banks against which the latter were only required to hold 35 per cent of "cash," and replacement of gold certificates by Federal reserve notes covered to 40 per cent in gold amounted to a further reduction of reserve requirements for the banking system as a whole and multiplied the potential effect of the reduction of member bank requirements, thus providing the machinery for "classic" war inflation. The policy temporarily adopted of paying out gold certificates in preference to notes, of course, mitigated *pro tanto* the last-mentioned effect.

[1] The reader is presumably by now aware of the fact that the writer does not harbor any too friendly feelings toward the quantity theory and, in particular, its modern revival. The fact that it works comparatively well under the circumstances of war inflation precisely shows that it is worse than useless if made to stand on its own legs, *i.e.*, on the logic of the equation of exchange as such. But we must give the devil his due and cannot agree with those economists who try to deny or explain away that fact itself. Exact covariation of prices and quantity of money it is, of course, unreasonable to expect. And foreign demand for American commodities does not provide independent explanation but was part of the very mechanism that the quantity theory assumes to exist.

[2] J. W. Angell, Behavior of Money, p. 17. The downward drift, though less pronounced, is also present in the ratio between outside currency and adjusted deposits subject to check (*ibid.*, p. 19). Attention should be drawn to the table at the foot of p. 17 which shows that the English ratio, while more than twice as high, also shows the decline and at approximately the same rate.

rapidly to a minimum for 1922, the difference being roughly 1 billion. The figure for 1923 shows a "normalizing" increase, but 1924 and 1925 show decreases and 1928 and 1929 but small increases: cyclical drains and remigrations are very feebly marked. We have a seasonally adjusted monthly series for currency outside the Treasury and Federal reserve banks which moves better in the cyclical phases, indicating the rise of the fourth Juglar, falling in 1927, keeping constant in 1928, falling in the first half of 1929 and again, after an understandable upward jerk, toward the end of that year and almost throughout 1930. This is important to keep in mind, considering the role in the cyclical mechanism attributed by some theories to cash movements. For us the point that matters is the accession of power to expand which this development brought to member banks as well as to reserve banks.

Second, while it is right and proper to stress, as most economists do, the difference that exists between postwar and prewar gold standards and monetary mechanisms in general, it must not be overstressed.[1] After all, during most of the period under discussion, a gold standard was in force in our three countries which in important respects, though not in all, actually worked much as its predecessor had done and was managed in accordance with principles and aims that did not differ *toto caelo* from prewar practice. This will presently become apparent. Just now it should be noticed that in this country, though it could no doubt have done very well without any gold at all, expansion of the sphere of money and credit was facilitated by the influx of gold (plus domestic production, which, including that of the Philippines, had been 4.9 million ounces fine in 1915, 2.5 millions in 1923, and then continued to decline to 2.2 in 1929), in spite of the facts that the monetary gold stock (gold in circulation plus gold in the treasury and the federal reserve

[1] In the first draft of this book it was that difference that was stressed, but the day of that task has passed. Any truth that fights against traditional habits of mind is in danger of being overstressed. It is, therefore, not otiose to insist on the following distinctions. First, if nothing had changed, either in the monetary systems or in the economic and institutional pattern of the world, we might still have acquired a different attitude toward the gold standard. Objectively, the gold standard of the twenties might not have been different, yet thinking might have made it so. This triviality is not superfluous, because some authors did, in fact, confuse new views with new realities. Second, the identical gold standard would have worked differently in the postwar environment, *e.g.*, under the influence of rigidities, barriers, political payments, and so on. This difference is really the most important one, but whatever consequences it may have had for the "classical" practice, it was not in itself a reason to abandon "classical" theory. Even of "classical" practice stronger traces can be observed—no matter whether this was good or bad—if we cease to libel it by defining it as a set of rigid rules without relation to the general state of the economic body and if we disregard phraseology (which however was not very novel either). Third, the rules of the game themselves may have been changed. They were changed, but not anything like as much as is now commonly believed. The great change came in the thirties.

banks minus earmarked gold) only increased to 1927 (annual average of daily figures for that year, $4.6 billions; 1922, 3.8) and that there always was "free gold."[1] For without that influx—and the free gold—the Federal Reserve System would have had to steer much closer to the wind[2] and either a problem of protecting the gold value of the dollar would have presented, or the necessity of some devaluation would have imposed itself. As it was, the abnormal influx exerted its normal influence, which was, to be sure, "managed" or regulated but not more so than—in countries with central banks—it had been in the last prewar decades.[3] An outflow of gold which under more normal conditions might have persisted, turned into an inflow in the last three quarters of 1920. This inflow lasted without interruption and in spite of capital export until December 1924, and then resumed in 1926 and again in August 1928, to last until October 1929, and to set in again in 1930. Agreement between this movement in the monetary gold stock and the movement in total deposits is not much worse than it had been of old. Persistence of "classical" relations is clearly suggested.

b. The mechanics of what is usually referred to as Federal Reserve Credit may be put into two graphic nutshells.[4] We will first inspect Chart LVIII.

Reserve bank operations, as recorded by the Combined Balance Sheet of All Federal Reserve Banks, may be summarized in terms of

[1] On this and cognate points see S. E. Harris, Twenty Years of F. R. Policy, in particular, vol. II, Appendix B, chart on p. 761.

[2] Among other things it could not have so readily extended help to foreign governments and central banks, though most of these transactions, especially the 200 million dollars credit to the Bank of England granted in the spring of 1925, achieved their ends without being used. Another form of help may be seen in discount and open-market policies which tended to stem the inflow of gold. This subject, which we can barely touch, has been ably discussed by A. Goldstein, International Aspects of Federal Reserve Policy, *Review of Economic Statistics* for August 1935.

[3] The much-discussed "sterilization" of gold, preventing "gold inflation" during the twenties, thus reduces to the fact that technically there was always some unutilized margin of gold. See below. The economists who made so much of that sterilization seem to have had an inadequate idea of the conditions under which the system worked and which made that margin necessary. Perhaps they also were victims of a belief to the effect that prices must rise in a country into which gold is flowing and that only sterilization can explain their failure to do so.

[4] Those two graphs compress, of course, a large amount of fact. They have been prepared by Dr. Carl E. Thomas, who not only worked up the material but developed the analysis of this subsection, much of which is taken verbatim from his report. For the sake of convenience, the description (see also Appendix) extends to 1937. It may seem hazardous to enter into a subject to which justice cannot be done. But as far as it goes, our argument is self-contained. For the rest, the reader is referred to the well-known standard works of Burgess, Reserve Banks and Money Market; Hardy, Credit Policies of the Federal Reserve System; Harris, Twenty Years of Federal Reserve Policy; and Riefler, Money Rates and Money Markets.

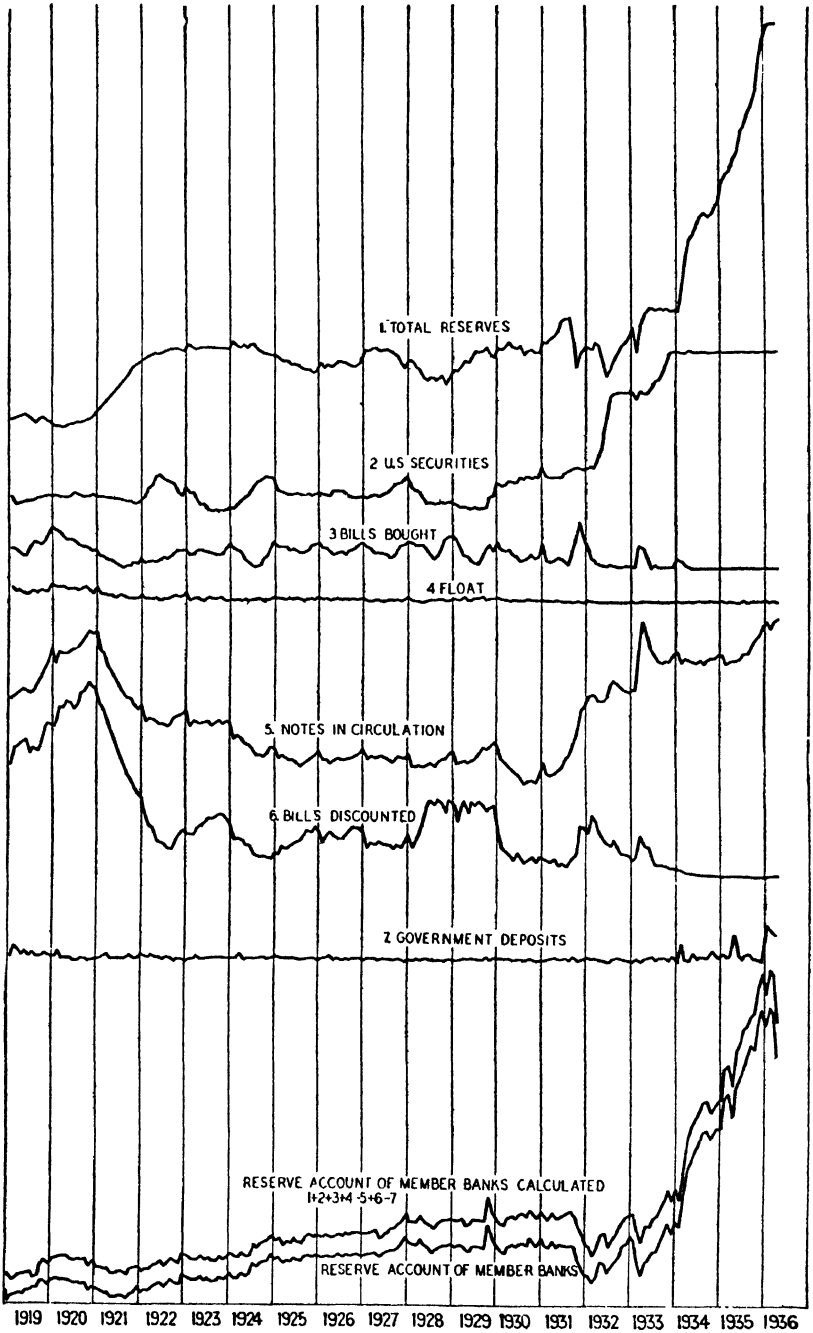


CHART LVIII.—(See Appendix, p. 1076).

eight accounts and of certain statistical relations which appear to exist between them.[1] These accounts are:

I. Total Reserves:

Gold, United States Gold Certificates (a small amount), Other Cash (including silver, a small amount).

Gold dominates this account. In 1919, gold constituted approximately 97 per cent, and in 1926 approximately 95 per cent of the total.[2]

II. United States Securities:

This account records changes in the holdings of Government Securities, *i.e.*, the bulk of Open-market Operations.

III. Bills Bought:

This account records bills acquired by the reserve banks. Bankers' acceptances are included under this title. During the period under review, bills were often purchased or sold to offset seasonal variations in the demand for currency and other central-market disturbances of a routine nature, such as government fiscal operations. To this extent these transactions are properly looked upon as open-market operations. But they really constitute a case intermediate between II and VI, because the initiative often came from the member banks.

IV. Float.[3]

V. Notes in Circulation:

Federal reserve notes and Federal reserve bank notes issued. This includes Notes of Other Reserve Banks, the amount of which is, however,

[1] Account totals are taken as of the "end of the month" in all cases. When figures are actually reported for the last day of the month, these have been used. When reports are available as of the end of each week, the report of the last week in the month has been used. Although "average daily" figures are available for all the major accounts, these data could not be used, since they are not in sufficient detail to enable checks upon content.

[2] Prior to January 1934, gold was valued, in the Combined Balance Sheet, at $20.67 per fine ounce. After that date it was valued at $35 per ounce. The gold account and the gold itself was then, at the old value of $20.67, transferred to the Treasury. In its place appeared a new account: "Due from the U. S. Treasury." Changes in this account, after January 1934, are recorded at the rate of $35 per ounce.

[3] Before January 1926, this account is represented by the difference between Uncollected Items and Deferred Availability. Its movements were insignificant after 1921. After December 1925, equal and offsetting amounts of "Uncollected Items" and "Deferred Availability" appear upon the Reserve Bank Statement. The previous difference is recorded in two separate accounts, namely, Float and Federal Reserve Notes of Other Reserve Banks. It is clear that previously notes of other reserve banks were treated as an uncollected item. Since they form a part of Notes in Circulation, it is necessary to add this item to the Float as published, to obtain a figure comparable to the previously recorded difference between Uncollected Items and Deferred Availability.

recorded for a period sufficiently long to warrant the assumption that it is not significant, so that the item may be roughly equaled to notes in outside circulation.

VI. Bills Discounted:

Member banks' rediscounts or indebtedness.

VII. Government Deposits:

This account was negligible until recently.[1]

VIII. Member Bank Reserve Account:

This account, often considered by practical bankers as the member bank clearing account with the reserve banks, records the indebtedness of the reserve banks to member banks.

It will be seen that the algebraic sum of accounts I–VII produces a time countour which is practically identical with that of VIII, the member bank reserve account. The difference in level between the two represents the net sum of All Other Accounts appearing on the balance sheet of the reserve banks.[2] This sum exhibits practically no current fluctuations. Its amount was in the neighborhood of 300 millions.

Now we subtract Notes in Circulation from Total Reserves plus United States Securities plus Bills Bought plus Float, and find an almost perfect inverse and linear relation between the result and Bills Discounted. See Chart LIX.

In a statistical—and a short-time—sense it may be said that members' indebtedness is largely "explained" by the net of those Five Accounts. And so is, hence, the reserve account, which is a function of this net and its relation to rediscounts or indebtedness.[3] It follows, in confirmation of what has been read earlier in this chapter, that members in the aggregate did not habitually borrow in order to expand their operations. They borrowed primarily in order to avoid having to contract them, *i.e.*, in order to replenish their reserve accounts when the net of the Five

[1] In the *Bulletin of the Reserve Board*, published in January 1936, it is definitely stated that the recent increase in Government Deposits was the result of the purchase of Government Bonds by Member Banks for which they surrendered Reserve Balances. This method of government finance involves a departure in technique from previous procedure.

[2] All Other Accounts consist of: Non-reserve Cash, Other Securities, Foreign Loans on Gold, Due from Foreign Banks, Bank Premises, All Other Resources, 5 per cent Redemption Fund, Foreign Bank Deposits, Other Deposits, Capital Paid in, Surplus, All Other Liabilities, Reserve for Taxes.

[3] A qualification is necessary with respect to government deposits. When they increase at the expense of members' reserves which, as pointed out above, has been sometimes the case in the last years, such increases would have to be added to the latter, in order to get the right contour. For the period under survey, however, this has no importance.

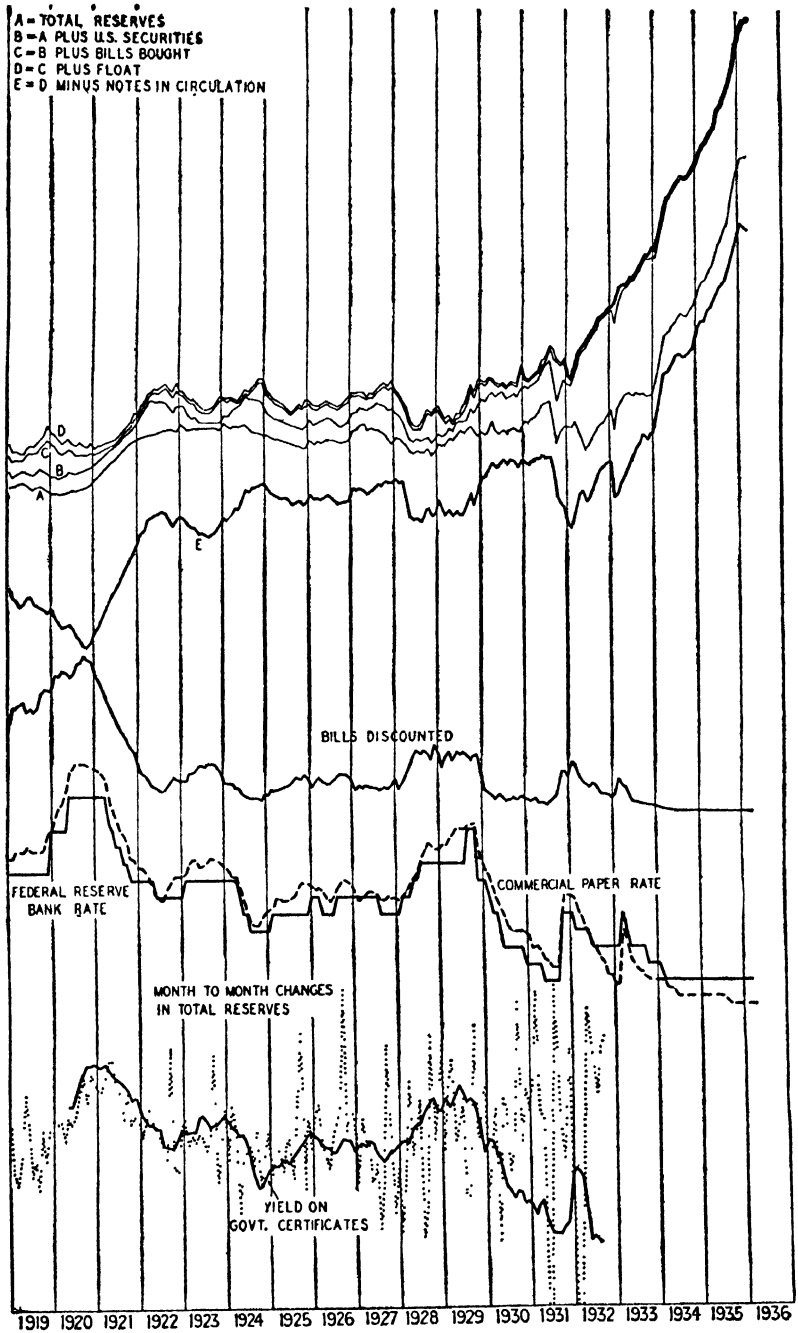


CHART LIX.—(See Appendix, p. 1077.)

Accounts decreased. And when that net increased, that is to say, when they experienced an access of funds, they did not primarily expand operations. They first of all reduced their debt. In some cases compensation was exact, or almost so. From November 1924 to March of 1925, for instance, the federal reserve banks sold 260 millions' worth of governments and bought 75 millions' worth of acceptances. The difference was practically made up by members' borrowing, which amounted to roughly 175 millions. In other cases the compensation was not nearly exact. We are not holding that expansion of loans and deposits was at no time accompanied by an uncompensated surplus of borrowing, still less that increase in our net was wholly compensated by repayment. The rediscounts, nevertheless, stand out as the variable primarily affected by the net and very little affected by anything else—a fact which is very important for any theory of the American central market.

Two other relations have been exhibited in the chart which illustrate what fundamentally is the same point, and characterize the same mechanism. First, the close short-run covariation, but slightly disturbed in 1929, of open-market rates, represented by the commercial paper rate, and rediscounts. Nothing can be more indicative of member banks' reluctance to being in debt than this fact, which is due to the promptness noticed before with which they contracted open-market commitments in that case. Or, to put it the other way round, the inverse relation between open-market rates and the net of the Five Accounts indicates practically complete short-run dependence of the former on the ebb and flow of "funds": *as a matter of surface mechanism and in the short run*, variations in these "funds," consisting in member banks' cash plus reserve balances, were the dominant factor in the variations of their debts to reserve banks, and variations in these debts the dominant factor in the variations of interest rates which, and *practically nothing else*, were, hence, amenable to control by the regulation of that ebb and flow. Now, putting aside internal drains and remigrations of cash, which, as we have seen, were of but secondary importance during the period under survey (at least after 1923), we may say that the variations of members' "funds" were a function of central creation and of gold movements. Central creation proceeded from the initiative of members (rediscounts; hereafter called Responsive Central Creation) or from the initiative of federal reserve banks (open-market operations in governments and to some extent also in acceptances, though these constitute an intermediate case—see above—hereafter called Autonomous Central Creation), only the latter being now included in that ebb and flow.

Finally, gold movements, whatever their cause, acted in the same way as autonomous central creation and must hence be, in this connection, algebraically added to it. But if we take them separately and if we

choose intervals of time short enough, we find that they are positively related to open-market rates with a decreasing lag.[1] On the chart, short-run gold movements have been represented by month-to-month changes in total reserves (which were mainly gold—see above), and open-market rates, by the yield on government certificates (but any open-market rate would do). This completes our picture by suggesting that total reserves, one of the chief determinants of short-run variations in open-market rates, are in turn themselves influenced by the latter, and thus supplying a link in a general relation of interdependence.

Very familiar traits (see Chap. XIII) of prewar patterns thus emerge in the postwar picture. Whatever theories we may make our own, facts behaved and mechanisms worked, during the period under survey, in a manner that was anything but revolutionary.

c. It remains to sum up the teaching of our charts from the standpoint of the Federal Reserve System and to appraise the effects of its policy on the course of cyclical phases. To formulate this policy in terms of intentions would be an impossible task; for, though this method is in any case hazardous, it becomes impracticable in the case of so acephalous a body as the one before us. A central organ of banking would, under the conditions and in the mentality of this country, always have an uphill fight against the public, the business community, speculators, senatorial farmers' friends, member banks, and hence find it very hard to acquire enough authority to pursue any policy consistently. But what or who was the central organ? There were, first, the reserve banks themselves, with which from the outset a considerable amount of initiative and autonomy had been lodged by the Federal Reserve Act, but which soon acquired a sort of customary right to initiate or "propose" the general policies of the system. Second, the Federal Reserve Bank of New York must be listed as a special "reserve authority," because its prominent position, its European connections, and its particular interests gave it a power and a slant quite out of line with those of the others, and because it evidently aspired to, and to some extent conquered, under the leadership of a *strong* man, the role of "the" central bank. Intimately connected with the New York bank was, third, the committee on open-market operations, which eventually developed into the most active element of the organism. Fourth, there was the Treasury, which had by no means forgotten its ancient role in the money market. And, fifth, there was the Board, which, sometimes at war with one or more of those other organs of general banking policy, at first tried to assert such powers as had been vested in it but soon drifted into the position of a coordinating

[1] The lag seems to have stabilized itself at about 4 months. After 1930 the relation ceases to hold. But many factors in that disturbed time—"capital flight" from Europe, for instance—readily supply explanation.

agency. This role, however, it filled with astonishing success, in spite of the fact (or because of it?) that there are unmistakable symptoms pointing to a serious division of opinions within it, which often paralyzed decision. The writer understands that election to a seat on the board was a coveted honor. But the seats must have been extremely uncomfortable ones, even if economists of all nations had not completed vexation by discovering that the Federal Reserve System was an entirely new departure, harboring unheard-of possibilities, sure to put an end to the recurrence of depressions, etc., and by thus raising, even among otherwise sane and intelligent people, hopes that were as unwarranted as their disappointment was certain to be attributed, in self-defense of the enthusiasts of scientific and extrascientific description, to the incompetence of the board.[1]

But fortunately we need not trouble about intentions and phraseologies. The actual behavior which the logic of the situation soon shaped into a definite pattern—1922–1923 roughly dates the decisive steps in its evolution—suffices for our purpose. Before that date, a tendency to help in the process of normalization after the war, as evidenced, for example, by the circular which reminded banks that war credits would not indefinitely be prolonged, is the only thing to note. Criticism of this attitude and the discovery that those outlets for the reserve "funds," which the Federal Reserve Act had contemplated, would not develop—*i.e.*, the business man's typical mortification at the absence of adequate earnings—perhaps provided the first impulse to embark upon buying governments at the beginning of 1922.

Turning again to Chart LIX, we are immediately struck by the fact that no energetic use was ever made of the discount rate. Not only was it always kept below even the commercial paper rate—thus never occupying the position or filling the function of German or English bank rates—but it also followed the market in every single instance except—and

[1] That body was so unfortunate as to draw fire even from the other party to the Battle of "Theories." Economists who did not share those hopes and quite correctly appraised the limitations of the doctrines on which they were based, are or were in the habit of accusing the board of misdirected measures responsible for what most of those economists would call *inflation* and, partly or wholly, for the subsequent crash. There are two mistakes in this, apart from the incorrect allocation of responsibility to the Board. First, such criticism seems to imply that these economists yield to their opponents to the extent of sharing part of the latter's exaggerated ideas of the importance of what central bank policy can make or mar. Second, they do not seem to take adequate account of the structure of the American financial engine and of the data confronting the board from the outset. The present writer is not offering laurels to the board. If he were hunting for the most appropriate sculptural ornament for the board's building, a statue of Hercules would certainly not be among the first to occur to him. But critics do make their task a little easy. It should be added that our list of "central organs" is by no means complete; but it serves to convey the essential point.

even this exception is more apparent than real—at the very beginning of 1928, when an effort was made "to gain control." But at the same time it follows from our analysis that there was another reason for this besides the "political impossibility" of handling that weapon boldly: to some extent the Federal Reserve System in fact controlled the situation of which market rates were the outcome and symptom, so that in following or ratifying market by bank rates it really followed and ratified the result of its own action—bank rate as an independent weapon had, in fact, practically ceased to exist. Such leadership or management as there was, was exerted through the Five Accounts, mainly by open-market operations, supplemented by suasion. As we have seen, this method requires in order to be effective a certain behavior on the part of members, in particular a certain attitude toward being indebted to reserve banks, for if they had all stormed for more credit and for permission to use it permanently and as a matter of course, they would have had the public behind them almost to a man, and any resistance by the board or the reserve banks would have been swept away. But this kind of discipline the better class member banks displayed throughout, and the greatest achievement of the board was its success in training them up to it and in establishing a professional tradition which made it derogatory to a bank's standing to be in the red at its reserve correspondent, except in order to tide over temporary pressure, or, for a first-class bank, to be in the red at all, even when the reserve system seemed to invite it by low rates. A qualification has to be added, however. We have said that discipline was kept unbroken until the crisis. This is true, for the whole period, only in a formal sense. In the spirit it holds only to the beginning of 1928. Then many important banks, especially New York banks, kicked over the traces by creating acceptances and selling them to reserve banks, not so much in order to evade the higher discount rate—this was a by-product—as in order to evade the necessity of running deeper into debt. The reserve banks bought, and were by the board allowed to buy, all that paper without demur. This is the most important instance of a practice which induced us above to qualify our inclusion of purchases of acceptances in open-market operations.

Barring this, the mechanism functioned. Although, as has been pointed out, open-market operations did not directly increase and decrease the borrowing facilities available to nonbank firms because the member banks (largely) compensated them—if, indeed, they were not from the outset intended to compensate, hence to be compensated by, gold movements— the policy was not thereby defeated since, whenever open-market operations decreased the net of the Five Accounts, banks were forced to borrow or—which served still better—to reduce their open-market commitments. But the corollary to this is that open-market sales never

went further than this, *i.e.*, beyond the compensating powers of banks. Perhaps they were not intended to. The committee on open-market operations had every reason to fear the reaction if its measures had touched "legitimate business." In any case, the effects which can be produced by this weapon, unless reinforced by simultaneous refusal to buy acceptances and by rationing credit to member banks, are limited to the available ammunition, which it may be impossible to collect. The reserve banks' annual average of United States securities holdings in 1919 was 261 millions—no great impression could have been made by any sale from this if there had been any wish to influence in this way the situation then prevailing. Luckily, the first open-market operation to be undertaken with a therapeutic intention was a purchase and not a sale: from January to May 1922, about 400 millions worth of governments was bought on the top of a steady influx of gold. In a sense this was the decisive step that raised the Five Accounts to the level under which they were, except in 1923, never again allowed to fall, and thus perpetuated the plethora of money. The alternative would have been to enforce the liquidation of member bank indebtedness without providing the funds for it. This would have spelled pressure, slower recovery, sobered advance, much less speculation, and, after 1929, a milder depression.

No real pressure was exerted by the next open-market operation, which was the first to offset a gold influx and consisted in the sale of about 525 millions United States securities between June 1922 and July 1923. Selling actually was, while it lasted, at a greater rate than gold influx, so that member banks were for the time being forced to borrow, but the continuing stream of gold alone soon made up for this and even during that time effects were amply compensated by gold plus bills bought plus borrowing, so that they did not extend beyond the central market. It should also be observed, in order to get at a sound appraisal of the achievements of this policy, that, as far as the preceding open-market purchases and the gold influx, as well as the incident reduction of member banks' indebtedness by over 600 millions, did speed up recovery—and while we deny that it *made* recovery and hold that it was all but futile as a remedy for depression, we do admit that the temperature of positive phases can be raised by central bank policies—they also helped to bring about the situation which the board or the reserve banks then felt to stand in need of restrictive correction. Thus a current view on the success of this policy requires to be corrected on two distinct heads: first, success in influencing cyclical situations was much smaller than it looked to *post hoc ergo propter hoc* analysis; second, such success as there was, in part consisted in correcting the effects of the reserve system's own policy.

What we might call the first conjuring trick followed. In the Kitchin recession and depression of 1923–1924, when finance and business felt a vague *malaise* after their doings in 1922–1923, the reserve system stepped forward to chase away darkness, to insure stability of prices and to guarantee new-era prosperity by buying about 510 millions' worth of governments between December 1923 and September 1924, which, in the minds of some economists, was simply equivalent to increasing active[1] deposits by 5,100 millions. In reality, it did not mean this but deposits did react, as well as member banks' debts, and the incident fall in open-market and reserve bank rates turned the tide of gold. The latter effect was really the most important part of the success, inasmuch as, partly because of European complaints and partly because of a perception of the difficulties which continued influx of gold might eventually produce, the turning of the tide was one of the objects of the measure.[2] As soon as November 1924, selling was again resorted to and continued to March 1925, when the total amount reached was 260 millions. This operation has already been mentioned in order to illustrate the *modus operandi*. Effects were as before, but the operation deserves to be emphasized as a token and measure of the success with which, braving many difficulties, the reserve system kept its hand on the steering wheel and actually followed a definite course. And the same may be averred about the two smaller operations, purchases in the amount of 65 millions in April 1926, and sales in the amount of 80 millions in August and September of the same year.

A situation closely similar to that of 1923–1924—the similarity extends to the presence of European influence, this time accentuated by a pilgrimage to the miraculous shrine—induced another purchasing campaign in May 1927 which lasted to December and raised the United States securities holdings of the reserve system by about 300 millions or to about double their previous figure. There was by then nothing unusual either in the occasion or the effects or the amount of the operations. If we did not know the contrary, we should not from the facts of the case infer that any controversy would have arisen about this particular operation or that the latter would have been considered as particularly admirable by some and as particularly mistaken by others, or finally that

[1] Time deposits in reporting member banks, however, increased during 1924 by nearly ¾ billion.

[2] As far as it was, the purchasing operations may have commended themselves to members of the board who neither believed in their efficacy as a remedy for the relapse in business nor would have approved of using the tool at that time, even if they had believed in its efficacy. Thus, as happens so frequently in all spheres of life, men were able, from entirely different premisses and with different and conflicting objects in mind, to agree on the particular measure.

praise or blame for it should have been fastened upon a particular man.[1] The reason for all this is, of course, in the fact that that was the last buying operation before the stock exchange crash of 1929. We fully share this motive, since we have had to stress both in our historical narrative and in our time-series analysis many an abnormality[2] in the economic processes of 1928 and 1929. But no amount of careful searching establishes the connection one has a perfect right to suspect. Such a search reveals indeed many individual facts which point to the presence of "artificial stimulation." For instance, gold exports were more than offset, and members' investments, total deposits, and—what is particularly significant—brokers' loans for own account of member banks, not only on account of others, were increased. But the effects of all this may, as we know, easily be exaggerated, and nothing really adequate for explaining either the boom of 1928–1929 or the subsequent breakdown can be linked to that buying operation per se as the sole or as a major cause.

In fact, there is good reason to doubt whether it played any role in the causal pattern, for the reserve system acted with more than usual vigor to stamp out any sparks that its action may have set flying about. First, mere cessation of buying had, because of the outflow of gold, some restrictive effect as early as December 1927.[3] And in January 1928 the reserve system embarked upon the biggest selling operation but one of its history, in which it persisted fully as long as was compatible with safety, *i.e.*, to April 1929, when sales summed up to 405 millions and total open-market operations since January 1922, as already stated, to minus 65 millions. Simultaneously bank rates were repeatedly raised, eventually (July 1928) to 5 per cent,[4] member bank's indebtedness (which however, as we have seen above, did not in this case quite fulfill its function) passed the billion line, below which it had moved ever since 1922,[5] and brokers' loans for own account dropped below 1 billion, while gold exports continued through July. This seems to have been drastic action if ever central bank action was. Nor was it futile, as some, or

[1] Mr. B. Strong's influence may have been much in evidence on this occasion. But the board certainly did not offer significant resistance, for they obligingly brought the reserve bank of Chicago into line when it displayed reluctance to reduce its rate along with the others. Nothing would have been easier than to checkmate Mr. Strong by letting Chicago have its way, which would have tightened the New York market.

[2] They cannot be listed again, but if the reader wishes to get the argument in full he should now go back and list them for himself.

[3] It is, however, true that the Treasury's needs for funds arising out of the conversion of the second Liberty Loan, which induced it to take and partly use an overdraft at the Federal reserve banks, may have counterbalanced that effect temporarily. But the net efflux of gold was 67.42 millions in December alone.

[4] The last step, from 4.5 to 5, was, however, taken by only eight reserve banks.

[5] The monthly average for 1920 had been nearly 2.6 billions and that for 1921 over 1 7.

oppressive, as other people thought. It tightened the central market. It did not exert pressure on industrial and commercial business, as is clear from the simultaneous increase in customers' loans which has been noticed before. And it was quite rationally discontinued in the second half of 1928, when the gold influx, which resumed in August, was allowed to take effect.

If the board needed any lesson, it was supplied by this experience, which conclusively showed that (relatively) high rates will attract gold, that for this and other reasons no impression could, by ordinary methods applied within ordinary limits, be made—except very temporarily (middle of 1928)—on the stock exchange, and that the most immediately dangerous breach in the wall was the loans on account of others. It is submitted that the inferences which might have been drawn from this lesson are, first, that bank rates should be lowered[1] and, second, that loans to the stock exchange should be attacked directly, though the lowering of bank rates through turning, stopping, or reducing the flow of gold would already have done part of the job. The first was not done, perhaps because it seemed too unorthodox a thing to do. But the second was exactly what, obviously taking its courage in both hands and dropping its attitude of dignified reserve, the board actually did[2]—or tried to do. It announced its intention, in the famous circular that was published on Feb. 7, 1929, "to restrain the use, either directly or indirectly, of federal reserve credit facilities in aid of the growth of speculative credit." The announcement was embarrassed, overcautious, and also not quite sound in explicit and implied argument, but in essence it proclaimed Mr. Schacht's policy of 1927, *i.e.*, the policy of forcing banks to withdraw their loans to brokers, whereby other lenders would be induced to retreat. No doubt is possible that this measure would have been quite successful if resorted to earlier, say, by one or, still better, two years. Then it would have prevented, whereas at the beginning of 1929 it could only have precipitated, the crash. The perception of this accounts both for the determined opposition—led by the reserve bank of New York[3]—and for the readiness of the board to yield, in June, after its

[1] We thus find ourselves *pro tanto* in agreement with many fellow economists, among them Professor Irving Fisher and Dr. Currie, with whose arguments and results we do not otherwise agree. It will, however, be realized that we arrive at the same result from very different premisses and expecting quite different consequences.

[2] There are many methods for achieving the same result, taxation amounting to confiscation of gains from stock speculation and others, but the one chosen was presumably the only one open to the board.

[3] That bank followed up its previous performance in the field of central bank policy by the proposal, made a few days after the board's announcement of direct action, to raise the rediscount rate instead. If the above analysis is correct, this, through attracting additional gold, would have given another impulse to speculation The reader will recall a similar observation previously made in our discussion of a similar situation in Germany.

policy had fully demonstrated its effectiveness by putting a stop to the rise in stock prices and reducing brokers' loans by between 600 and 700 millions. By then, however, it mattered little whether it yielded or not.

The reader will please formulate for himself whatever may seem to him to follow from this analysis as to the merits of the actual practice described or of the various alternatives advocated at the time and later. For the purposes of this book it is sufficient to state or restate three conclusions to which we have been working up all along.

First, whatever conflict of "theories" and intentions there may have been, we have seen that the actual behavior of the organs of central banking in this country reveals a very definite pattern. This pattern greatly differs, of course, from that which we have tried to piece together for prewar times from the behavior of such central organs as the American banking system then possessed, since these had little facility for concerted action. But it differs much less, in essentials as distinguished from forms and methods, from the prewar patterns of central banking in countries which then had individual central banks. Gold movements, in particular, and the state of gold reserves indeed did not play the role which it was usual to assign to them in prewar theories of central banking. But this was partly due to exceptionally favorable circumstances which would also have pushed reserve considerations into the background for any prewar central bank; and though the effects of gold movements were no doubt regulated, as they had always been, they were not therefore obliterated. Open-market operations were no novelty, nor did they serve in fundamentally new ways or for fundamentally new purposes. American conditions put them into the limelight and enforced their systematic use, but that was all.

Second, it follows from this, together with our general view on the role and possibilities of central banking, that the cyclical processes of the period were not substantially affected by the policy of the reserve system. Its attitude to the ups and downs of business was much the same as the attitudes of central banks had been for decades before the war. It "regulated" the central market and, doing this ably and conscientiously, achieved what can, and failed to achieve what cannot, be achieved in this way and what equally ably and conscientiously managed central banks achieved and failed to achieve before. The successes of 1924 and 1927 and the "failure to prevent the great depression" are largely figments of the mistaken theories of the day. With respect to that failure, however, a secondary though still important qualification is necessary.

Third, this qualification bears upon the well-known controversy whether or not there was "inflation" or "deflation" and whether or not the reserve system and its policies were responsible for it. Couched in

less ambiguous terms, the question reads whether there are in the behavior of time series any deviations from expectation which are traceable to acts or attitudes of the reserve system or other autonomous monetary factors. All the evidence presented points to the conclusion that, so far as fluctuations and "trends" were concerned, this was not the case until the spring of 1928. Quantities, prices, values, incomes, and so on behaved substantially as we should have expected them to behave in the absence of disturbance from the monetary sphere, although monetary magnitudes and expressions moved on a level explainable only by the uncorrected monetary disturbance caused by the war and by war finance. The attempts that have been made to allocate responsibility for the occurrence of the great depression to monetary and banking factors, or to the behavior of economic elements primarily shaped by them, sound as unconvincing if they come from authors with "inflationist," as they do if they come from authors with "deflationist" sympathies. In particular, there is little more than assertion in the theories which hold that interest rates or prices were either too high or too low or declining too slowly or too rapidly. Our methods are rough. We must, hence, admit the possibility and even likelihood that there may be elements of truth in all those and similar assertions, even in mutually contradictory ones. But they are obviously inadequate to the phenomenon to be explained: common sense and common experience should be sufficient to convince us that if explained by maladjustments *such as these*, the great depression remains unexplained. Reserve policy in particular seems rather to have warded off than to have caused disturbance, rather to have eased than to have impeded adaptation, rather to have brought out than to have destroyed or controlled the essential (expected) contours of the cyclical process—the last point being illustrated, for instance, by the fact that rediscounts moved so well in the cyclical phases. The paradox that has been so keenly felt by economists and noneconomists, *viz.*, how such a thing as the great depression could have occurred if, though not everything, yet so much in the economic organism was "quite all right," obviously calls for, and is resolved by, the more fundamental explanation which the logic of the capitalist process supplies.

But if that is so with respect to the occurrence of the depression, it is not necessarily so with respect to its intensity. And the latter links up with the breakdown of stock markets and this again with the abnormalities of the last 2 years of the period. Then it was that things got out of hand, in spite of the fact that the reserve system used its regulating powers fully as much as the nature of these powers seemed to permit. But what precisely were the things that got out of hand? The immediate trouble was with the stock market and with loans on account of others. We need only follow up this clue in order to get an answer which will

supply also the qualifications to be added to the above statements about reserve policy and its effects. The loans on account of others were but a symptom of the abundance of money that prevailed throughout and of the powers of the deposit manufacturing engine. The increase in loans and investment of All Banks which occurred from 1922 to 1929 amounted to about (difference of annual figures) 18.5 billions and tells but part of the tale. The other part is in the fact that at any given moment funds in existence were much above business requirements, the excess being uncontrolled and uncontrollable. So long as, under the influence of the lesson of 1921, their owners and the banks kept discipline it was possible for the reserve system to maneuver successfully. As soon as they ceased to follow the lead, as they were bound to do sooner or later, the consequences followed automatically. We are not going to discuss responsibilities or the question whether the diagnosis should be expressed by saying that there was potential "inflation" all along, which turned into actual "inflation" in 1928. It is enough that this course of events, whatever its appropriate name, could, though not by routine methods, have been prevented in 1922 without anyone except speculators being the worse for it—even at the time—and that this necessarily would have made a great difference in the intensity of the depression.

d. The policy of the Bank of England and the conditions in the English open market may be described as they have been above (Sec. C) in terms of the effort made, first with increasing, then with decreasing success, to maneuver back to the gold standard at prewar parity and to keep on it. As has also been observed already, this did mean pressure on the economic process. And gold movements and states of the gold reserve, which was no longer protected by an unchallenged world-banker position as it had been in prewar days—no longer, especially, by a thick wall of well-disciplined and quick short-term assets in foreign countries—hence also money rates, were more important and more delicate to handle than ever. The central bank aspects of this are obvious from Chart LX.

That situation, complicated as it was by the practical necessity of resuming long-term foreign lending, especially within the empire,[1] was as difficult in practice as it was unproblematical in theory. If the policy of the Bank of England had not been given such undue prominence, both in the analysis of the shorter fluctuations of English business and employment and in the causation of the great depression,[2] no further comment would be necessary. As it is, we must stay for a moment.

The Bank of England encountered, within its general policy, which was dominated by the exigencies of that maneuvering, current business situations in exactly the same spirit and in much the same way as it had before the war. In 1920 it acted with less promptness and went less far than on some previous occasions, but still raised its rate to 7 per

cent on Apr. 15 and then took 22 months to return (Feb. 16, 1922) to 4.5. However, the gloom of English business prospects, which could not have been relieved by money at 2 per cent, and the brightness of American

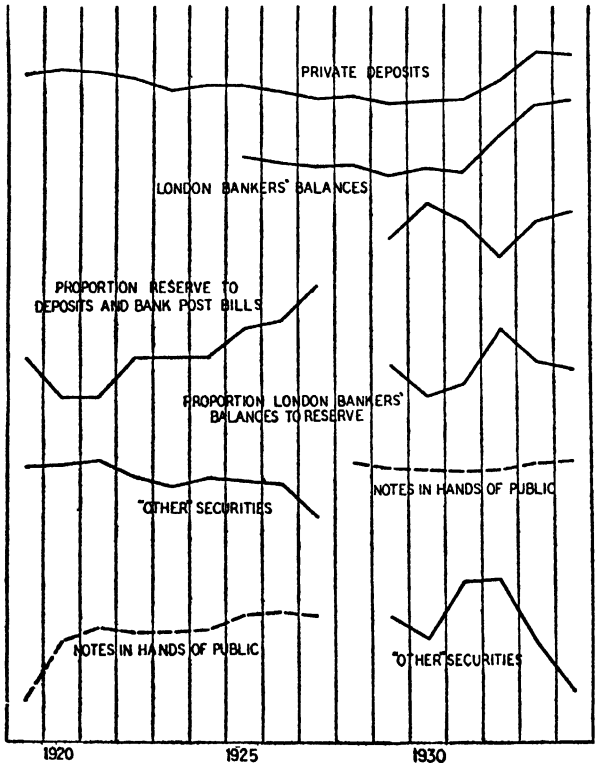


CHART LX.—Bank of England series (see Appendix, p. 1077).

prospects, which could not have been darkened by money at 7 per cent, obviously offer a much more plausible explanation of the difference in the

[1] The relative importance of loans to the Dominions or to borrowers in the Dominions greatly increased in the postwar decade, though total long-term foreign lending never came near the 1913 figure (197.6 million pounds). Loans to borrowers in the British possessions amounted (in million pounds) to 69.2 in 1925, 57.5 in 1926, 98.2 in 1927, 81.5 in 1928. The balance of payments for the same years was: +54, +9, +114, +149.

[2] The chief authority to sponsor what seems to the writer a seriously wrong view is Mr. Hawtrey. *Cf.*, for example, Trade Depression and the Way Out, new ed., 1933, pp. 20 *et seq.*, where he presents a sketch of English postwar business fluctuations viewed almost entirely as functions of bank rate, which in turn is made a function of the absorption of gold by France and the United States. Since the bank, considering the precarious position of the pound, had to be very cautious in following its traditional policy of lowering the rate in negative phases and to keep it low in recovery, and very prompt in raising it in prosperity, it is not difficult to establish correlation or lagged correlation. But we know that this proves absolutely nothing for the presence of a cause-effect relation.

speed of recovery in the two countries. After that, cheap money policy prevailed for a time, as it had always done after the passing of a "deep" depression, though, under the circumstances, it was not possible to carry it quite so far as it had been carried in the comparable segment of the preceding Kondratieff.[1] For the next 3 years, *i.e.*, before the pound reached parity, the rate was on the average actually lower than after, which is very natural because maneuvering up to parity was a much easier task than maneuvering to keep on it. The latter had to be done, not only without the help of international speculation, but in the face of constant danger of attacks from it—for selling short was thenceforth (beyond costs) riskless. In the domestic situation there was, in fact, nothing to prevent the Bank from going on with the rate of 3 per cent, which had been reached on July 13, 1922, and retained to July 5, 1923, although the Federal Reserve System sold United States securities[2] during that year. But eventually the strain proved too much and on July 5, 1923, the Bank's rate went to 4 per cent, although the Federal Reserve System then discontinued sales. It remained there until Mar. 5, 1925, in spite of the Federal Reserve System's buying operations in 1924—presumably, in order to enhance their effect on the Bank's position—and also in spite of the sales that followed them. But then came, with only a 2 months' interruption, over 2 years at 5 per cent. This rate was no doubt higher than would have prevailed without the abnormalities in the situation. But recovery turned into prosperity all right, and if this term be objected to, the behavior of the index of production is, in any case, conclusive evidence of a considerable improvement, which, it is true, was seriously impaired by the great social struggle of 1926. In 1927 the easy money policy in New York was cautiously responded to by a reduction of bank rate to 4.5 per cent, which, moreover, was not always made effective. The year 1929, of course, revealed the intrinsic weakness of the situation. The increase of the bank rate to 6.5 per cent, on the surface not more serious than its apparently similarly conditioned peak in 1899, and the decline of the Bank's gold stock below the Cunliffe level ushered in the death struggle of the pound. But it no more caused the depression than a similar rate had caused a depression in 1899.

[1] If 1865 to 1874 be accepted as a roughly comparable segment, we may note that the monthly fluctuations of the average for those 10 years were between a maximum of 4 pounds, 8 shillings, 8 pence (November) and a minimum of 3 pounds, 2 shillings, 2 pence (September). For 1875 to 1884 the monthly maximum of the 10-year average was between 3 pounds, 18 shillings, 2 pence (November) and 2 pounds, 15 shillings, 8 pence (April). See Palgrave, Bank Rate and Money Market, p. 97.

[2] For our theory is: when the Federal Reserve System sold, this stiffened, other things being equal, the New York open market and attracted gold to America, which would also tend to stiffen the London market and, moreover, weaken the pound and vice versa in the case of buying. In fact, European influence was, obviously on the same theory, exerted in favor of buying operations in 1924 and 1927. To some students this will seem too evident to be worth stating, to others it will seem wrong.

CHAPTER XV

The World Crisis and After[1]

A. The World Crisis and the Cyclical Schema.—We should now be able to answer the question how far the course of events from the fall of 1929 to the summer of 1938 can be described in terms of the analytic model presented in this book and how far other factors, external or internal, new or old, must be relied on for explanation. From the standpoint of this question alone and merely as a last exercise in application of that model we will review the sequence of situations and some of the policies of that period. This object is not so modest as it might seem. The answer will, directly and by implication, economically and sociologically, cover much more ground than the question at first sight suggests. But precisely because it will, the reader should be reminded once more that no conclusion we may arrive at can do more for him than to help him to see things more clearly. From that to practical evaluations or recommendations the way is long indeed. And everyone of us must, carrying his own individual load of desires, prejudices, and visions, travel it alone.

Whenever any set of propositions and observations leads us to expect a certain event, the actual occurrence of that event will always strengthen our confidence in those propositions. In such cases we are in the habit of saying—at the risk, as we have had ample opportunity of observing, of some violence to logic—that they are "verified" by that event or that they "explain" it. Now in this sense the occurrence at that time of a severe and prolonged depression in itself verifies or ratifies the application of our model, *i.e.*, warrants explanation in terms of our process. For we need only survey, in the light of our interpretation, the developments since 1898 in order to understand why such a depression should have occurred as part and parcel of that process. No claims, be it repeated,

[1] Although an endeavor will be made at the expense of some repetition to protect the following exposition from certain misunderstandings to which some statements to be made are liable if taken by themselves, this chapter should not be read before the analytical apparatus presented in this book has been fully mastered: the theory of the "world crisis" begins on page one. No new charts will be presented, but those that have been used in the preceding chapter cover and illustrate the main points of the argument of this, and should be referred to again.

are made for our three-cycle schema except that it is a useful descriptive or illustrative device. Using it, however, in that capacity, we in fact got (in Chap. XIV, Sec. E), *ex visu* of 1929, a "forecast" of a serious depression embodied in the formula: coincidence of depression phases of all three cycles. It will be well to recall once more what this formula precisely means. For reasons we know, capitalist evolution spells disturbance. We also know that it spells simultaneous disturbances of different order of importance and different range in time. Junctures therefore occur in which the symptoms incident to scrapping and rearranging dominate the scene. Among these junctures there are some in which adjustments to long-range and more fundamental, and adjustments to short-range and less fundamental industrial changes do not occur at the same time, and there are others in which they do. In the first case, symptoms will be mitigated; in the second, intensified—or, to return to the schema, in the first case the depressive phases of one or two cycles will hit a "floor" provided by the nondepressive phases of the other or the two others; in the second case there is no such floor and hence a more serious and especially broader trough[1]—all of which could easily be translated into terms of hard business fact.

In XIV, E we went a step further by making the—absurd—assumption of strict periodicity of all the cycles and equal duration of all their phases. Counting on in the same manner, we should get a Juglar depression—on the Kondratieff depression which dates from the fall of 1925—from July 1930 to the middle of November 1932, which should be severe, to be followed by a Juglar recovery to March 1935, which we should expect to be, owing to its position within the Kondratieff, slow and weak. That depression would contain three Kitchin phases, a depression to the middle of April 1931, a revival to January 1932, and a prosperity to the middle of November 1932; and the latter two should assert themselves mainly (not wholly) by decrease in rates of decrease. *This* schema has none except illustrative significance and no value attaches to the dates.[2]

[1] That the situation of 1930 answers well to a description in terms of the three-cycle schema has been noticed by Professor Alvin Hansen, Economic Stabilization in an Unbalanced World, 1932, p. 95.

[2] But we may still compare at least the general import of our schema with the predictions made by forecasters in 1930. Professor Warren Persons, for instance, (Forecasting Business Cycles, p. 44) predicted the upturn for February to April 1931. This was by no means so compromising a failure as people—and Professor Persons himself—thought. It was arrived at in a perfectly workmanlike way by methods which it was quite possible to defend. It is a not uninteresting question to ask what the failure was due to. We observe that Professor Persons' dating corresponds fairly well with ours as to the Kitchin revival. This is more than a coincidence. He was reasoning on the course of short cycles—though not exactly of our Kitchin—which was all he recognized. For this his forecast was not wrong. What he overlooked—as businessmen did—was the drift of

It is, however, important to stress the common sense of the broad diagnosis thus invested with a spurious precision as to details. Realizing from historical observation the extent of the revolution that had occurred in the industrial structure and was in the act of upsetting its system of values, shall we be surprised at the emergence of a situation in which perhaps three-quarters of all businesses in the United States (including farms) had to face the necessity of an adaptation that threatened them with economic death? And is there really much to object to in the statement that this situation was the fundamental fact about the world crisis, compared with which all other factors, however important, were after all but mitigating or accentuating accessories?

Before proceeding to qualify and to elaborate, we will advert to a consequence which follows if that diagnosis can be established. Capitalism and its civilization may be decaying, shading off into something else, or tottering toward a violent death. The writer personally thinks they are. But the world crisis does not prove it and has, in fact, nothing to do with it. It was not a symptom of a weakening or a failure of the system. If anything, it was a proof of the vigor of capitalist evolution to which it was—substantially—the temporary reaction. And in any case it was—again, substantially—no novel occurrence, no unprecedented catastrophe expressive of the emergence of new factors, but only a recurrence of what at similar junctures had occurred before.

The first qualification is that, so far, the above argument covers only the course of events down to the bottom of the depression, which, as we shall see, occurred in the second half of 1932. Subsequent events raise problems concerning recovery policies, which bar any statement at this point.

Second, it should be recalled that we never either undertook to explain or succeeded in explaining everything about any crisis or even depression. There was, in particular, the important class of "understandable but nonessential incidents." In this instance they may be exemplified by the activities of, say, Hatry or Kreuger and so on: even German experience might have been somewhat different but for the impulsive personality of the leading man of the Darmstädter und Nationalbank. An example of more important elements of this class of phenomena is the violence—though not simply the occurrence—of the boom and the crash in the stock market of the United States, which forms no part of the essentials of our process, yet powerfully influenced it. But the boundaries of this class should not be extended too far. The building

things below that surface movement, *i.e.*, the longer cycles and their phases. That failure of predictions to come true may thus be used to illustrate the shortcomings of what we have termed the single-cycle hypothesis. It also illustrates the necessity for forecasting of understanding the logic of industrial evolution.

booms and their slackening from about 1928 on, for instance, or the bulk of the difficulties in the agrarian sectors do not belong here but were perfectly normal elements of that process.

The American debt situation and the American bank epidemics—there were three of them—are in a class by themselves. Given the way in which both firms and households had run into debt during the twenties, it is clear that the accumulated load—in many cases, though not in all, very sensitive to a fall in price level—was instrumental in precipitating depression. In particular, it set into motion a vicious spiral within which everybody's efforts to reduce that load for a time only availed to increase it. There is thus no objection to the debt-deflation theory of the American crisis, provided it does not mean more than this.[1] The element it stresses is part of the mechanism of any serious depression. But increase of total indebtedness at the rate at which it had occurred in this country is neither a normal element of the mechanism of Kondratieff downgrades—repayment such as was effected by big concerns either from profits or from the proceeds of bond and stock sales fits better into the picture—nor in itself an "understandable" incident, like speculative excesses and the debts induced by these. It must be attributed to the humor of the times, to cheap money policies, and to the practices of concerns eager to push their sales; and it enters the class of understandable incidents only if we include specifically American conditions among our data. Similarly, bank failures are of course very regular (though still not essential) occurrences in the course of any major crisis and invariably an important cause of secondary phenomena, in particular, again, of downward cumulative processes. Those epidemics cannot, however, any more than the German difficulties in this field, be considered as wholly explained by the ordinary mechanism of crises or by that mechanism plus the fact of excessive indebtedness all round or even by all that plus the stock exchange crash. The German breakdown is partly attributable to very special circumstances of an extra-economic nature without which nothing could have shaken such concerns as the Austrian Kreditanstalt or the Dresdner Bank. The American epidemics become fully understandable only if account be taken of the weaknesses peculiar to the American banking structure, which made it succumb as no European system would have succumbed under similar circumstances—in particular, the presence, fostered by legislation and public opinion, of a large number of small and inefficient banks and the absence of anything like the English tradition. Compared with this, the insolvency of foreign

[1] Professor Irving Fisher, see, for example, Booms and Depressions, p. 85, does not seem to claim substantially more than that. We may demur at his sweeping statement that a fall in prices *always* impairs debtors' ability to pay. But "that over-indebtedness and deflation were strong and indeed dominating factors" need not be denied.

debtors was, especially since it impinged primarily on strong concerns, of minor importance.

Third, there were the external factors. In noticing them in Chap. XIV, Sec. C, we found that their importance, *so far as the causation of the world crisis is concerned*, may easily be overestimated. Some of the most conspicuous political and social changes of the postwar time, such as the Russian developments or the destruction of the Austro-Hungarian Monarchy, no doubt interfered with the "normal" working of the economic engine but have—excepting perhaps the breakdown of the Viennese banking center—little if any bearing on the *crisis*. Shifts of, and impediments to, international trade made many countries, and especially England, less prosperous than they would otherwise have been, and shaped, by thus weakening the organisms on which the crisis impinged, very many details of the picture, but this is all. In particular, it would be unwarranted to attribute any of the major features, let alone causation, of the American depression to a "flood of imports." Imports, on the contrary, fell rapidly at the critical time: they totaled $4.4 billions in 1929, little over 3 in 1930, a little over 2 in 1931, and about 1.3 in 1932. German exports were in 1929 and 1930 a nonnegligible factor. But they and their possible effects were more a consequence than a cause. Nor can the fiscal and social policies of England and Germany have directly accounted for more than a weakened resistance to the impact of depression[1]—against which, moreover, must be set their restraining influence during preceding prosperities.

We have seen, it is true, that the indirect influence of those policies, certainly in the case of Germany and possibly also in the case of England, on short capital movements had much to do especially with what in a narrower and perhaps more proper sense should be called the *crisis*. And the provisional solution that had been arrived at for the problem of international payments was bound to break down in any major depression and, before doing so, to accentuate its difficulties. We do not even wish to palliate the influence of such monetary disorders as occurred before the depression had the chance of tearing up the flimsy tissue of pseudo gold currencies. The South American, especially the Argentinian, disorders and the fall of the price of silver have undoubtedly played some role.[2] But all this looms so large because a depression

[1] This is perfectly compatible with our estimate of their importance in general. The above statement is intended only to guard against overestimation of their importance in the causation of the great depression.

[2] Gold movements are covered by short capital movements. In spite of devaluation, the shrinkage of international trade, and repayments, the Bank for International Payments estimated the total of international short credits at from 29 to 30 billion Swiss francs for 1934, roughly three times the prewar figure. But, as has been stated before, apart from them gold cannot have played any major role.

occurred for other reasons. As a man may suffer from many ills and yet for an indefinite time lead a vigorous life without being seriously inconvenienced by them until, when his general vitality has ebbed away, those ills or any one of them may suddenly acquire what to the specialists' eye will seem paramount or even fatal importance; so the economic organism always does bleed from many wounds which it bears lightly in three out of the four cyclical phases, and which spell discomfort when one cycle, distress when two, catastrophe when all the cycles are in the depression phase. No doubt, external injuries were of unusually great importance in this case,[1] but explanation cannot be derived from them.

B. 1930. 1. *The United States.*—The businessmen and forecasters, who in the fall of 1929 had made up their minds that nothing worse was ahead than a "recession" not much more serious than that of, say, 1924, cannot have been very disappointed by the general look of things during the first half of 1930. At the beginning, stock prices rallied strongly, security issues were large, signs of improvement showed in many spots, money was easy. All that, except the easy money—prime commercial paper rate fell from 4.89 per cent in January to 2 per cent in August and was 2.88 in December; for June it was 3.54 per cent—passed quickly, it is true, and proved to have been a meaningless flurry, due perhaps to the confidence that was so widely felt or to the organized effort to make a stand that prompted some additional spending. But until about the end of June business moved along on a but slowly falling level not much below the figures of 1929 in practically all lines.[2]

The second half of the year presents a wholly different picture. What was generally recognized as liquidation all round was the outstanding feature. Rates of contraction quickened and comparison with 1929 figures became increasingly melancholy. As we have put it above (Chap. XIV, last sentence of Sec. E) people felt that the ground under their feet was giving way. There was, however, no panic or even alarm until, late in the year, distress signals showed in the banking sphere, the failure of the Bank of the United States (December)[3] attracting particular attention abroad. And not only totals for the year but also figures for the end of the year were far from being catastrophic. Total corporate issues were $5.473 billions—slightly above the level of 1926, though only

[1] It should not be forgotten, however, that the crisis was nowhere else anything like so severe as in the United States, the country most nearly free from injury by external factors.

[2] The business curve of the Harvard Barometer was, during those 6 months, almost horizontal. The A curve ("speculation") had lost by May what ground it had gained during the first quarter.

[3] The writer has, however, not been able to convince himself that Europeans really thought that this bank was something like the Bank of England or the Banque de France, and that this belief materially influenced events.

about 55 per cent of the 1929 figure—or, exclusive of refunding issues, 4.5 billions, slightly below the level of 1926. Outside debits (133 cities) with 137.5 billions were only a little below 1926 and about 14 per cent below 1929, though contraction was severe from the beginning of July to the beginning of September. Outside net demand deposits, as already pointed out in the preceding chapter, neither were appreciably lower for the year nor fell appreciably within the second half of the year—July, 8.117 billions; December, 7.911 billions. But *All Other Loans had already shrunk sharply* from November 1929 to May 1930 and then continued to decline. Some hoarding demand for money, increasing "money in circulation" and total federal reserve credit outstanding, showed in December. Number of banks suspended (1,345) was in fact more than double the yearly average 1921–1929 (627), but 1,158 of them were nonmembers.[1] Excepting July and August, there was net influx of gold in every month which, together with the issue of additional national bank notes, brought excess reserves of member banks to about $475 millions by the middle of November—a position of the banking system as a whole that was technically anything but weak, although the value of collateral was already seriously impaired.

There was nothing abnormal under the circumstances in the quickening decline of prices of finished products, which within the year fell by about 10 per cent. The wholesale price index was pulled down by the fall in the prices of semifinished goods and especially of raw materials—the December average of the latter was over 20 per cent below the January average. Money rate of wages fell considerably in agriculture, but was (see below) substantially maintained in industry. In the fourth quarter, however, reductions in individual industries were sufficiently important to affect the general index, though they still left real hourly earnings at a level higher than that of 1929. Weekly money earnings decreased even for the first quarter, and weekly real earnings eventually fell[2] to 90 per cent above the prewar level. Wage bill continued its descent from the peak of the third quarter of 1929. In New York State, for instance, factory pay rolls declined by about 25 per cent from January to December.

Total monetary labor income for the year as estimated in the study made by the Department of Commerce in cooperation with the National Bureau (S. Kuznets, *National Bureau Bulletin*, Jan. 26, 1934, p. 5) was, however, only 7.9 per cent and total monetary income produced only 15.1 per cent below 1929. But net earnings of all corporations (excluding

[1] The sum of deposits affected was, however, nearly 865 millions, more than four times the 1921 to 1929 average.

[2] For the cost of living index used in arriving at the above statements see *International Abstract of Economic Statistics*, 1934, p. 205.

tax-exempt ones and life insurance companies) before deduction of income taxes were by over 78 per cent below the 1929 figure ($1,960 millions), printing and publishing, foods, beverages, tobacco products, chemicals, metal and metal products, paper, pulp and its products doing comparatively well, textiles particularly badly.[1] The most serious features of the picture are displayed by the indices of industrial production and of employment. Output of equipment and durable goods in general, as reflected, for example, in steel ingot production, fell sharply after May. Motor-vehicle factory sales were less than 2.8, as against 4.6 billions. The Harvard Society's index of volume of manufactures declined by over 22, the Federal Reserve Board's index of employment by over 16.2 per cent within the year,[2] whereby the former almost reached the trough figures of 1921[3] and the latter slightly fell below them.

Mining did somewhat better than manufactures, and power production was in the first six months above, and in the last six months not much below, the 1929 level. Total construction as measured by contracts (Dodge figures for 37 states) was over 20 per cent below 1929 and would have been still lower if publicly and semipublicly financed building had not kept up or even somewhat increased. But it is worth noting that public utilities increased their expenditure on construction ($644 millions as against 473 in 1929) and that residential building did not decline much. It was, as we should expect, industrial and commercial building which caused the fall in the total.

The brightest features of the picture are to be found in the sphere of consumption, the surprisingly good showing of which has not always received the attention it merits. Sales by department stores, while consistently and increasingly below those of 1929, were still 102 per cent of the 1923 to 1925 average and their December holiday trade in the New York district—containing, however, one more selling day than in 1929—was only 4.5 per cent under that of the previous year. Considering the fall in prices there obviously cannot have been decline in physical volume. This is borne out by the behavior of carloadings of the l.c.l. category, which in contrast to total carloadings declined but moderately. Consumption of a number of articles, such as cigarettes and gasoline, electric

[1] See S. Fabricant, *National Bureau of Economic Research Bulletin*, Apr. 11, 1935.

[2] 16.2 is the percentage by which the December figure was below the January figure, which is what we mean by loss within the year. The production index, however, did not decline monotonically, and the January figure, though the index is corrected for seasonal variation, does not seem to represent the situation well, because it reflects restrictions decided on at the end of 1929 and partly reversed at the very time when they affected the index. So the average of the first 3 months was taken instead.

[3] Wheat, cotton, cattle and hog receipts were but little below 1929: the agrarian sector behaved according to form. The value of the wheat crop was only a little over 60 per cent, that of the cotton crop less than 60 per cent, of the respective values in 1929.

current for domestic use, telephones, radio sets, and refrigerators, increased or declined but insignificantly. To save space, reference is made to the careful study of Mr. A. R. Tebbutt.[1] The number of business failures, consistently and increasingly above that of 1929, was as yet far from alarming: about 2,000 a month, which is less than the average number of failures from October 1921 to June 1922.

An attempt to answer the question how far these facts can be trusted to reflect the working of our model (including "understandable non-essentials") naturally divides up into two tasks. On the one hand, we have to ask whether expectations from our model are adequately borne out. This is obviously the case. Even disregarding the exact coincidence of dates with our experimental count, we readily see not only that the history of that year as a whole is not badly rendered by the formula "a recession sliding off into deep depression," but also that the economic physiognomies of the two halves of the year, differing as they do characteristically from each other, conform to our idea of such a situation in every single symptom excepting the short-lived rally at the beginning. The reader should have no difficulty in verifying this proposition as to general contours—the behavior of price level, output, interest rates, deposits, clearings, incomes, employment, and so on—and it will be sufficient to draw attention to a few points.

That rally at the beginning was, as has been said and as will presently be explained, due to organized effort, but too much importance should not be attributed to that effort, because expectation would in any case have been for fairly sustained business at that time. In particular, it is perfectly in keeping with our schema that industrial money wages did not during the first half of the year fall to any significant extent—the reader will remember that there is no reason to expect wages to fall in recession and that no inference about subsequent disturbance can be drawn from their failure to do so. The ease in the money market was also normal under the circumstances[2] and a simple consequence of "business deflating itself." It does not call for explanation by Federal Reserve Board policy, although the latter no doubt contributed to it (see below). Not less true to form were the effects of that ease: as normally happens in recession, it helped to keep up residential construction

[1] Arthur R. Tebbutt, Behavior of Consumption in Business Depression, published as No. 3 of the Harvard Business School *Business Research Studies*. For that and the following year this study gives a very instructive picture, although its details (such as the behavior of candy and women's night attire) are sometimes not easy to understand. The opportunity may be taken to refer also to other studies in the same series which, as for instance those on the operating results of chain stores, present valuable information about the later phases of the depression and about the subsequent recovery.

[2] We observe similar ease and a sharp fall in rates after the crash in 1873 and after that of 1893.

and to induce certain types of investment, for example, by utilities, which, however, acted also under another stimulus. The unequal—in the case of some, especially of new, commodities negative—rates of restriction, the severe slump in the second half of the year in the sales of "postponables," and the behavior of consumption should be particularly noticed.

Hence, although our methods do not enable us to formulate our expectations numerically and although it is impossible to say whether our series exactly behaved as they should have done according to our theory, it is possible to say that they did so as far as we can make out. Facts would not refute us even if we made bold to say that nothing but our process had acted on the economic system, and they certainly bear us out if we conclude that that process constituted the dominant factor, while—witness all those undoubtedly very competent judges of business situations who were unable to account for or to predict anything but a brief recession—without that process the events of that year and of its sequel would have to be explained in terms of such slogans as overproduction, oversaving, overinvestment, and so on, *i.e.*, could not be explained at all.

On the other hand, we must consider the possibility that other factors influenced the course of things in such a way as to produce a spurious verification. Attempts to influence the process have not been entirely absent and must be taken into account even if, relying on previous argument, we discard the possibility that influences from abroad might have significantly affected the American situation in other ways than through the stock exchange.[1] There were, first, measures in aid of agriculture and an appeal to the household remedy of the party in power, the Hawley-Smoot tariff. The effects of the former, though certainly not negligible, failed even in the agrarian sector to modify conditions sufficiently to make them diverge from expectation and cannot a fortiori have been very important for the system as a whole. The effects of the latter, partly counteracted by reprisals, may under the circumstances be equated to zero.[2]

Second, there was the President's hortatory action, which was, by staving off reductions in wages and by stimulating investment, "to make

[1] That influence was exerted through stock exchange operations we, of course, do not deny. But this is sufficiently taken account of by recognizing that boom and crash had been more severe than they otherwise would have been.

[2] The writer does not wish to deny that conditions in certain industries may have been slightly steadied by the tariff or that a more thoroughgoing analysis might make out a stronger case. But until proof to the contrary is forthcoming, he is inclined to rate both the stabilizing and the dislocating effects of the Hawley-Smoot Act rather low, and net effects still lower.

certain that the fundamental business of the country shall continue as usual."[1] The interest for us of this and similar attempts consists mainly in testing those theories that see in depressions nothing else but the result of businessmen's moods, which, themselves ultimate data, shape business situations by means of the cumulations and accelerations induced by individual acts. In this case conditions were quite exceptionally favorable to success. The American business world was, as has been pointed out, by no means overpessimistic at that time. It was in the habit of looking for a lead to the heads of a relatively small number of concerns, which, moreover, were big enough to be able to influence the situation "mechanically" by their own action. Expansion would have been eminently to their interest and certainly was what they actually wished to see. Receiving themselves a lead from a political agent that was in no way antipathetic to them and being, many of them, imbued with high-wage theories, they, in fact, made an effort both by refraining from lowering wages or from doing anything else that would have been suggestive of depression, and by launching out into investment—the utilities and railroads in particular (see Chart LIII) responded to the appeal and even borrowed for the purpose, so that the "principle of acceleration" had plenty to work with. Nor was the result simply nil. The case shows to perfection what can and what cannot be achieved—and explained—in this way. We have above noticed the "flurry" at the beginning of the year, which may, though only in part, be attributed to that effort.

Third, we have seen that public expenditure was kept going and even increased, especially by means of public construction. It has been estimated[2] that net federal income-generating expenditure for the year was 251 and for the second half alone $450 millions. This is not negligible. But it may well be doubted whether that part of the total which may be reasonably assumed to have become fully effective during the year can have influenced events materially. The Federal Reserve System, finally, followed a policy of easy money—which policy, as we have seen, but ratified the situation—thus giving business all the rein and all the encouragement it could possibly have wished for.[3] As soon as it had become

[1] *Cf.* President Hoover's message to Congress, December 1929. For similar utterances by various types of authorities see Mr. Walter Lippmann's quotations in *The United States in World Affairs*, 1931.

[2] See Professor A. D. Gayer, What is Ahead?, *The New Republic*, Feb. 2, 1938, p. 391. The federal deficit for 1930–1931 was over 900 millions. This was mainly—to almost three-quarters—due to a fall in revenue, while in England and Germany revenue increased, in England's case by 43 million pounds; in Germany's case insignificantly. Taxation may by mobilizing idle deposits be income-generating, even if it entail no borrowing from banks.

[3] The question whether the "dear money policy" of 1928 and 1929 can, partly or wholly, be held responsible for the events in 1930 has been discussed in the preceding chapter, Sec. F; the questions of principle involved, in Chap. XIII.

obvious that business was in for a "recession" and before any vicious spiral had developed, the reserve system resorted to what the public and many economists had by then come to believe in as *the* remedy, open-market purchases on a large scale. From October 1929 to December 1930 it bought government securities to the amount of 560 millions or, more precisely, its holdings of government securities rose from 136 millions on Oct. 23, 1929, to 533 millions on Dec., 18, 1929, then fell to 477 in January 1930 to rise again to 602 by the end of August. After that date, purchases were reduced to insignificant amounts. For this there were two excellent reasons. First, those purchases which it was thought had been so effective in stimulating activity in 1924 and 1927, at this time did not seem to have any effect at all.[1] Members reacted primarily, although they also increased their investments, by paying off rediscounts, and were obviously much more troubled about finding customers for their funds than about finding funds for their customers:[2] to anyone at all open to argument and evidence on the subject, any further steps in that direction would have seemed altogether futile. Later on, in the second place, the gold influx provided another reason for discontinuing that policy.[3] We may, hence, conclude that the behavior of the reserve system, while it favored cheap money and expansion and certainly exerted no depressing effects, yet was no major factor in shaping the business situation—our process seems, as far as that goes, in fact to have worked all but undisturbed.

2. *England.*—The outstanding fact about the English depression is its mildness, which makes it doubtful whether that term is applicable at all. This statement may sound strange to many readers who are, in connection with the world crisis, impatient of anything but superlatives. It could, however, be reduced to the obvious if we consider that the behavior of some of the worst symptoms is amply accounted for by the fall in exports and the impact of foreign insolvencies—phenomena that were

[1] This will not astonish us. But it is not superfluous to weigh the implications of that fact, which should according to ordinary rules of inference suffice to cast doubt on the two previous instances.

[2] Rediscounts had been at about 1 billion in the summer of 1929 and were down to about 200 millions by July 1930. Investments of reporting member banks rose from 5,486 millions on Aug. 28, 1929, to 6,329 millions on Aug. 27, 1930. The reader should observe how very "regular" all this was from our standpoint.

[3] For the year net gold imports were about $280 million. Net release from earmark was minus 4.4; total increase in gold stock 305.4 millions. An eminent economist, who is more enthusiastic about open-market operations than the writer feels able to be, attributes their failure to take effect to inadequate dosing and to the policy's being abandoned "in the face of" the gold imports from October on. This implies that he looks upon gold imports not only as factors of decrease of Federal reserve credit outstanding in the technical sense, but also as a reason for and not against open-market purchases. This the present writer entirely fails to understand.

to be sure largely due to cyclical factors (and their "secular" net results) but must be classed as external from the standpoint of the English organism.[1] But, even independently of that, the depression was in important respects much milder than in this country. Nor shall we wonder at it, for if the evolutionary process is the fundamental "cause" of prosperity and depression, relative weakness of its positive phases will be accompanied by relative mildness of negative phases.

In 1930 the London and Cambridge Economic Service annual index of total production fell to a little below the figure of 1928 (1928, 108.7; 1929, 115.8; 1930, 106.5). Some groups, however, displayed increase (leather and India rubber trades) or insignificant decrease (food, drink, tobacco; nonferrous metals).[2] Within the steel group, the number of motor vehicles produced declined very little.[3] Analysis of the building index, which fell more than any other component of the total, reverses the inference to be drawn from it: the fall in houses completed during the year is entirely due to the cessation of construction under the Chamberlain Act and, to a lesser extent, to temporary reduction of building under the Wheatley Act, while the joint effect of this was to more than 50 per cent made up for by privately financed construction. This increase in unsubsidized housebuilding, which gathered force instead of slackening in the second half of the year, suffices by itself to negative the idea of a depression of unprecedented severity. With this the high and rising unemployment figures seem difficult to reconcile. But the fall in exports (see below) partly resolves this apparent contradiction.[4]

Wholesale prices and cost of living fell steadily, as we should expect—the fall in the former, the reader should recall, meant partly, though not wholly, a gift presented to England by the countries producing raw materials—and short money rates continued during the first 5 months their

[1] It is disheartening to observe that difference of opinion is possible about what seems to the writer so obvious a point. Mr. Hawtrey (Trade Depression and the Way Out, p. 27) for instance, state that in the latter part of 1929 England was already a "deadly centre of contagion" from which the "blight of pessimism" was ready to spread. This is on a par with his statement (*ibid.*, p. 26) that depression had prevailed in England *ever since* 1920 (*sic*). In part such differences are presumably due to different use of terms. But the present writer feels unable to understand those statements—and many others—in whatever sense he can conceive them to have been meant.

[2] The index includes agricultural output, which also declined, though not quite so much as the total index.

[3] So did the shipbuilding index of the Service. It is, however, important to note that tonnage *commenced* declined drastically in the second half and especially toward the end of the year. Coal also declined (see below), but less than steel. Conditions in the textile industry were unsatisfactory.

[4] From January to December 1930 the total number of unemployed insured persons (Great Britain and Northern Ireland) increased by nearly 700,000. The average figure for the year was 16.1 per cent. Part of this, however, was an effect of previous rationalization.

descent from the peak in the autumn of 1929. After that they fluctuated at a low level, the three months' rate, for example, around 2.3 per cent, which was *about* 1 *per cent below bank rate.*[1] Deposits in the nine clearing banks moved above 1929 figures in the second half of the year, as did investments *and discounts.* Town and metropolitan clearings were but moderately smaller, but provincial clearings by over 15 per cent. New capital issues for Great Britain were less by 20 per cent. Prices of fixed-interest securities rose, and prices of industrial stocks fell in the way that is normal under the circumstances. Professor Bowley's index of average weekly wages, which had declined by one point and a half in 1927, by two points in 1928, and by one in 1929, fell by another point and a half, and thus only continued in 1930, without acceleration, a tendency it had displayed before, while real wage rates, of course, rose considerably within the year.

The reader should judge for himself how far this pattern accords with our model. In doing so he should observe that in order to account for the very great difference between it and the American pattern we need not fall back upon anything external to that model. Nor could we do so if we wished, for although there is no doubt, of course, that the English organism was much more exposed to external influences (in our sense) than the American, nothing but depressing effects could have emanated from them. The most important has already been mentioned. Money value of total exports fell off by approximately one-fifth (1929, 720 million pounds; 1930, 571; peak 1924, 801), that of all manufactures by about one-fourth, the greater part of this loss being concentrated on the second half of the year. Income from foreign investments also declined. Domestic policy may for the purpose in hand be described as neutral. The slum clearance and the coal acts exerted, the first no effect, the second little effect during the year.[2] The budget for 1930–1931—it was Mr. Snowden's second budget, though the first for which he took full responsibility—provided for a considerable increase in ordinary expenditure, most of which was, however, due to the "derating plan" of 1929–1930, *i.e.*, the transfer of certain local burdens to the national budget, which only then took full effect. Income tax was increased by sixpence, allowances for smaller incomes being so adjusted that the increase was effective for only about one quarter of all income tax payers,

[1] Bank rate was reduced to 3½ per cent on Mar. 20, 1930. The maximum of 6½ per cent occurred, it will be remembered, Sept. 26, 1929–Oct. 31, 1929. At the beginning of 1930 it was 5, from Feb. 6, 4½; and from Mar. 6, it was 4 per cent. Again, as in the case of the United States, it is assumed that the question of the influence of 1929 rates has been disposed of in the preceding chapter, Sec. F. The gold situation, which did not grow worse until November, will be more conveniently dealt with later on.

[2] Average net selling value of coal at pit head and wages per man shift were, however, both slightly higher at the end of December 1930 than at the end of December 1929.

and the surtax and inheritance tax were raised, the additional burden being considerable only in the higher brackets. Without receding from his general opinion about the effects of fiscal policies of this type, the writer believes that the increments decided on cannot have accentuated the depression materially and that, on the contrary, the budget may have strengthened confidence in the seriousness of labor finance.[1] All this was not "pump priming." But neither was it "deflation."

3. *Germany.*—Though German developments during that year, unlike American, but like English developments, could not be completely understood without appeal to external factors, fundamental contours nevertheless answer to our schema. To factors external to the economic process we attribute, as has been explained in Chap. XIV, Sec. E, the early emergence of difficulties right after the strong prosperity of 1927. German industrial production and employment fell already in 1928—more precisely from the last quarter of 1927—and the former but weakly indicates the bulge in 1929, which is so marked in English and American graphs, while unemployment in that year was getting nearly as serious as it had been in 1926. Prices of shares had declined—this, of course, was perfectly normal, much more so than the American boom—ever since April 1927, and so had issues of fixed interest securities—this was contrary to what we should expect to happen within our process in a Juglar recession, though readily explainable under the circumstances—and government as well as municipal finances had begun to be a source of anxiety in 1928. It is thus not surprising that people were talking about a "crisis" from the beginning of 1929, general uneasiness being intensified by failures of the type that reveals unsound financial practice (Frankfort Insurance Co., August 1929, the failure of which had nothing to do with insurance but all the more with promotion—the German Hatry case), by the acceptance of the Young plan,[2] by the sudden withdrawal of foreign balances in April and May 1929, by communist unrest issuing in an outbreak in the latter month, by the swelling

[1] The deficit eventually amounted, as per accounts, to 34 millions, but disappears when properly corrected for items which should not be counted in figuring out a deficit. On Consolidated Revenue and Expenditure Account (*cf.* Colin Clark, *op. cit.*, p. 140) of Government, Local Authorities, and Social Insurance, there was an excess of Income (1,022 million pounds) over Expenditure (982 million pounds). Unless we assume that all of that billion was paid out of existing *and active* deposits, we are driven to the conclusion that public expenditure added, though only a little, to the sum total of income, *i.e.*, that there was a small amount of "income generation" through public expenditure.

[2] Whatever intentions and the merits of the case may have been, the Young plan sapped the political strength of the government and the parties responsible for its acceptance much more than they themselves at first realized. Though it did not immediately create any difficulties, and though it fully provided for all difficulties which were thought likely to arise, it contributed—though under rather than on the surface—to that state of the public mind and is thus relevant to our subject.

tide of social burdens, by the inability or unwillingness of government to deal with the labor situation, and by a spreading sense of the brittleness of the political structure of the time.

While objective facts do not quite bear out that pessimistic attitude for 1929, the situation deteriorated in 1930 more rapidly in Germany than in England or the United States. It is true that public spending (see below) kept up consumption and that sales of cooperatives—even general retail trade in such articles as furniture—fell off but little. It is also true that hourly wage rates did not fall till the last months of 1930, but on the contrary slightly rose until then, keeping on a level of nearly 25 per cent above 1925 and, for the year, also above 1929. But this does not characterize the situation, because they were so kept by political, legal, and administrative pressure, particularly by the practice developed by the official arbitrators (*Schlichter*), and because, these official rates being trade union minima, the rates actually paid may have fallen without affecting wage statistics, provided they still remained above those minima.[1] According to an investigation of the Verband Deutscher Metallindustrieller for the Berlin district, the latter, however, does not seem to have been the case, at least to an appreciable extent, until the autumn of 1930. No doubt, of course, can be entertained about the increase of real wages, the Reich's cost of living index (1913–1914 = 100) falling at an accelerating rate from 151.6 in January to 141.6 in December.

A number of symptoms behaved in a genuinely normal way. Bond prices rose until July—the London quotation of the Dawes loan began to fall in May—when the political situation provided a reason for a downturn; money rates fell till about August, the bank rate staying at 4 per cent, the postinflation minimum, from June to August; Reichsbank clearings and debits to postal accounts receded moderately; advances in current account (Schuldner in laufender Rechnung; Grossbanken only) increased and so did the amount of bills held by banks, though under conditions of monetary ease the Reichsbank's portfolio decreased sharply during the first three quarters of the year.

The gold withdrawals from middle of September to middle of October, amounting to about 1 billion marks, were met and the reserve was replenished to the extent of half of that sum from the proceeds of a foreign emergency loan negotiated by the federal government. They were wholly political in nature.[2] The increase in bank rate which they induced

[1] Also, under conditions of severe unemployment, actual payments below those minima may possibly have been connived at by trade unions. The "rigidity of wages" thus may be spurious in part.

[2] It is just possible that small withdrawals would have been made in any case, owing to the preceding fall in German money rates. But since in other countries rates had fallen as much or more, this is not likely. Nor was it likely, circumstances being what they were,

led to a stiffening of rates all round, but the situation being what it was, an increase of 1½ per cent (prime bankers' acceptances) can hardly have been a major consideration in short-term operations, while nobody was ready to embark upon long-time investment in any case.

Total industrial production shrank, relatively, as much or more than it did in this country, and it did so from the very beginning of the year. The January figures for crude steel and products of rolling mills were down by about 13 and 10 per cent as compared with the figures for January 1929, which were already low.[1] By December the (imperfect) index of production landed at 72.5 per cent of 1928. The total number of unemployed was about 3 millions during the first 10 months and rose to nearly 4.4 in December. There cannot be any doubt that the extra-economic factors alluded to had much to do with this. Superimposing themselves on what would in any case have been a depression, they intensified it greatly, as some of them had previously damped prosperities. The writer does not know of any facts not covered by this diagnosis. In particular, it is (when we recall what those factors were) reasonable to say that they could not have produced a slump of that magnitude by themselves, *i.e.*, if the organism had been in one of its positive phases.

Government was influenced by two opposite considerations or, rather, was under pressure from two different camps. Many interests, especially the agrarian interest, the condition of which grew steadily worse, and the labor interest, which anticipated a breakdown of the unemployment insurance and further increase in unemployment, needed and pressed for help. There was also increasing demand for pump priming. Other interests pointed and pressed in the direction of an attempt to use the depression in order to normalize general conditions, *i.e.*, to break with the spending habits of public bodies, to retrace steps in social legislation, to reduce money wage rates, to buttress the currency and its purchasing power, and so on. Such views were not, however, held by interested parties only. Many people even believed not only that such a policy would provide sound foundations for future progress, but also that it would have remedial effects at the moment. "In the years from 1927 to 1929 we have been wandering in an economic, financial, and socio-political labyrinth (or maze; the German word was *Irrgarten*). And now we must return to sober reality"—so the federal minister of labor,

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that an increase in bank rate of one per cent would exert any protecting or attracting influence. As far as that goes, the increase was merely ceremonial. And since there was no excessive activity to restrain, it is difficult to see what purpose it was to serve. Economists imbued with a mystical belief in the efficacy of interest rates will no doubt explain all that was to follow by it. This cannot be helped.

[1] Coal output was, however, higher for January and February, output of coke for January.

Stegerwald, himself a prominent labor leader,[1] declared as late as December 1931. Whatever the merits or demerits of such a policy, which has been and is so unintelligently recommended by some and so unintelligently rejected by others, it is important for our purpose to ask how far it was proceeded with during that critical year. In doing so we must realize that those two policies were not so mutually exclusive as they might seem. Certain steps on the lines of the first were hardly avoidable precisely in order to get maneuvering space for the second. Some steps on the lines of the second even an adherent of the first would have had to take if he was to avoid chaos in a country which had had so recent an experience of what inflation is. A horseman who alternately collects and gives to his mount does not thereby contradict himself or prove his lack of purpose.

The government spent freely. The federal deficit of over 1 billion marks (1930-1931) following upon a deficit of 712 millions (1929–1930) was relatively more income generating than was the deficit of the United States. In taking measures in aid of agriculture, in providing means for those unemployed whom the statutory or financial limits of unemployment insurance failed to include, in doing some pump priming and straining its credit (the slogans were cranking, *Ankurbelung*, and bridging credits, *Ueberbrückungskredite*), the government certainly discovered and acted upon the theory of the unbalanced budget. By the (amendment of the) bank act of Mar. 13, 1930, long-term bonds of the Reich, of the states, and of the municipalities became eligible as collateral for Reichsbank credits, and toward the end of the year treasury bills were freely discounted by the Reichsbank. This is not exactly "deflation," whatever that term may mean. Two moves on the other line were obviously intended to serve as safeguards in the long run. First, the shadow of a curb was provided for future excesses of municipal finance by certain regulations intended to make it more difficult for municipalities to run into debt (Dec. 3, 1930). Second, the Reichsbank nailed its colors to the mast by putting into operation Clause 31 of the bank act of 1924, which bound it to do what, so far, it had done without obligation, *viz.*, to redeem its notes in gold or exchange (Apr. 19). Both measures might have become effective in the future, but certainly cannot have had effects in 1930.

The only other point that matters here was the government's move to reduce rigid prices (end of August), which went parallel to its efforts to keep up agrarian prices. The index of prices at wholesale (Institut für

[1] He was not a socialist. But socialist labor leaders did not object as strongly as they assuredly would have done if they had really thought him wrong. The writer's impression is that they too were of the opinion that things had gone too far and rather felt relieved when somebody else shouldered the unpopularity of leading back to the highway.

Konjunkturforschung: 1913 = 100) for 1930 was 114, as against 131 for 1929, and fell rapidly within the year. But the government and the public were as much exercised about "administered" prices as the American government and public are now. Moreover, the argument presumably suggested itself that it would be easier to reduce wage rates if the government aimed also at other points in the price structure. Accordingly, it embarked upon a campaign for the reduction of prices and costs, while the Reichsbank busied itself until October in bringing about a general reduction in interest rates, particularly in East Prussia.[1] We are not concerned with the logic of all this. Since it worked with and not against the stream, it probably effected little beyond somewhat quickening adaptation in sticky spots. A number of rigid raw-material prices, which had not moved at all during 1929 and the first months of 1930, fell by a little over 10 per cent toward the end of the year. The weighted average of trade union wage rates declined by 5.8 per cent in the first 4 months of 1931, while the index of production increased by 9.1 per cent in the first quarter, and employment by 5 per cent during April and May 1931, both indices being cleared of seasonals. Presence of a causal relation was claimed, possibly not quite without foundation.[2]

C. 1931 and 1932.—While it was necessary to have the facts of 1930 firmly planted in the reader's mind, it seems possible to confine discussion of the two years which span the real "catastrophe"—of the capitalist system or of an individual system of economic values—to a number of comments that can easily be worked up into a connected survey.[3]

1. *Physical Production.*—The fundamental point to emphasize is again that there is nothing in the fact that severely depressive symptoms

[1] Annual report to the shareholders' meeting, Apr. 29, 1931.

[2] So, for example, in Lohnpolitische Kurvenbilder zur Krisenlage, Verein Deutscher Maschinenbau-Anstalten 1931 (mim.). Even the "possibility" that that argument be "not quite" without foundation really goes much further than most modern economists would care to go. The present writer would not go further than that. But that possibility he is prepared to prove. That pamphlet does not fail to notice the lag between increase of output and increase of employment, which it explains partly on statistical grounds and partly on the ground that in such situations the labor employed is underutilized.

[3] There is some danger in thus leaving room for uncertainty of interpretation on many points which could be removed only by thorough discussion of every detail. But we have no choice. Some general impressions can be gleaned from referring to our charts. The current reports in the *Review of Economic Statistics* (W. L. Crum) and the London and Cambridge Service would prove helpful. Beyond this, the simplest way of testing and supplementing the statements of our text is perusal of the *World Economic Surveys* by Professor J. B. Condliffe (League of Nations, Economic Intelligence Service). Professor Bertil Ohlin's Course and Phases of the World Economic Depression will prove a valuable guide up to the summer of 1931. Comparison between those interpretations and the one offered here is invited. Mention should be made, also, of Professor Lionel Robbins's analysis in The Great Depression.

continued to dominate the picture in all three countries to require additional explanation from our standpoint—nothing has to be explained away, and that fact fully conforms to expectation from our model. As stated in Sec. A, that picture reflects ever since, roughly speaking, the middle of 1930 an element not in evidence before—the "vicious spiral" which for nearly two years would by itself suffice to describe the surface of what was going on. But we know that the process thus designated is to a greater or lesser extent a feature of any depression. It is, in fact, largely responsible for turning the "normal liquidation" of recession into the "abnormal liquidation" of depression (Chap. IV). *At that stage*, the phenomena expressed by the "principle of cumulation or acceleration" and by the "debt-deflation" theory become part of the cyclical mechanism, a particularly important part when all three cycles are in the phases most favorable to them.[1] But since we also know that the working of the spiral is erratic ("internally irregular") and extremely sensitive to incidents, accidents, and external factors, and that the troughs it creates are intrinsically unreliable, we must, especially in the face of the various recovery policies that were taking shape in those two years, recognize the limitations of any attempt at verification beyond that fundamental fact. Barring crises and panics, which may occur at any time and the occurrence and effects of which have simply to be registered, we expect a depression to display shrinkage at decreasing rates until it shades off into recovery, in the case of the Kondratieff on a very broad bottom and in the case of the Juglar on a bottom of about a year, while the Kitchin phases should show in what statisticians call surface movements in series corrected for seasonals. Even without attaching weight to the dates yielded by our experimental count (see above, Sec. A) we will note that since a Juglar depression must contain positive Kitchin phases—and, if we trust our schema to that extent, end up with a Kitchin prosperity—it should display an observable, though possibly weak and short, upturn at the bottom, which again is nothing else but our way of expressing a familiar fact of business experience.

[1] Hence, it would not constitute valid objection to say that the events of these years do not require explanation by the theory of innovation but are adequately explained by the vicious spiral or by the principle of acceleration. The one and the others do not stand on the same plane of argument and cannot be pitted against each other. Believing he has made this abundantly clear throughout this book, the writer wishes to add only two minor points. First, the word *acceleration* seems to suggest increasing rates of change; this would, however, even if the word were to be taken at face value, not contradict the expectation to be presently met with in the text, because that word refers only to a component and the expectation to a resultant. Second, it might be held that, the facts covered by the term Vicious Spiral being the outstanding feature of those years, we may stop at that and discuss the theoretical and practical problems of the situation without going beyond those facts. This is not so. It is not indifferent, for either diagnosis or therapy, what starts the spiral.

What are the facts? According to a very general opinion with which we agree in this case, a preliminary answer may be derived from the behavior of industrial production: nothing else qualifies equally well for the role of an indicator of the objective state of the system in the later part of depression and during recovery. We will look first for the lower turning point, or rather, remembering our view about troughs, for the lowest segment of our—or almost any[1]—graphs. In almost all countries, however different their structures and general conditions,[2] particularly in Austria, Belgium, France, Germany, Hungary, Italy, Poland, and Sweden, it occurs in (the middle of) 1932. In the Canadian index the trough comes in February 1933. Japan was an exception all along, in fact, the standard instance for advocates of inflationary policies, who have only to be reminded that the case is a special one in that this policy found all the conditions ready at hand for a rapid industrialization of the country. In the English case there is some doubt, which will, however, be presently removed;[3] but our chart displays a well-marked trough in the summer of 1932. So it does for this country. The relapse in the spring of 1933, which carried the American index back to about its previous low, while not in itself astonishing—that after a depression of such severity relapses should occur in the first stages of recovery is perfectly understandable on common-sense grounds, even without appeal to the course of Kitchin phases—was serious enough to suggest the presence of disturbing factors. But since the advent of a new administration pledged to pursue an active policy and the third epidemic among banks—which will be dealt with below—readily supply the explanation, it seems reason-

[1] Graphs displaying the behavior of indices of production in different countries are, in spite of the problems that arise on the score of comparability, among the most common tools of scientific and popular analysis of the crisis. Specific mention should, however, be made of the work of the National Bureau—Professor Mills in the *Bulletin* for Feb. 20, 1933, and Mr. Bliss in the *Bulletins* for June 26, 1934, and Nov. 15, 1935—and of Miss D. Westcott, *Review of Economic Statistics*, Dec. 15, 1934. Also see again N. J. Wall, Monthly Index of World Industrial Production, 1920–1935, Bureau of Agricultural Economics, 1936.

[2] Unfortunately, it is not only the economic structures and conditions but also the indices which are different to the point of incomparability. It is believed, however, that the validity of our argument is not substantially impaired thereby. The *shapes* of the bottom parts of the curves are not alike and raise various questions of detail, which will, however, be dealt with only for the United Kingdom and the United States. If we can trust the index or the available indications, Rumania and Spain did not conform. But the course of things in Spain was clearly politically conditioned (proclamation of republic, April 1931). In Tchechoslovakia the bottom comprises 1932 and 1933, but the steepest descent was in the last quarter of 1931 and the first quarter of 1932, after which the index crawled along level until late 1933.

[3] In the London and Cambridge Service annual index (including agriculture and building) the low occurs for 1931, but 1932 displays the annual minima in iron and steel, nonferrous metals, food, drink, tobacco, and the leather group. In mining 1933, in textiles 1930 is the minimum year.

able to accept the 1932 trough as the "true" one, although according to some indices—not, however, that of the Federal Reserve Board—the trough in March 1933 is somewhat deeper still. For both manufactures and minerals, also for steel, lumber, petroleum refining, coke (by-product), foods (the descent of which, however, was hardly perceptible) textiles, automobiles, and construction (values) taken separately, decline came to a stop by roughly the middle of 1932. Only for cement, rubber products, and power production,[1] possibly also tobacco, the halt does not come before the spring of 1933, while leather and leather products turned up by the end of 1931. The behavior of carloadings and imports (current values) bear out the general picture and so did business failures, which fell sharply after reaching their peak in the summer of 1932. The Federal Reserve Board's index of department-store sales declined until the spring of 1933, but this was due to the continued fall in prices.

Thus it seems that, so far as physical production is concerned, the location of the bottom of the depression answers well to our idea as to where it should have occurred. Turning, in the second place, to the descent to that bottom, we find[2] that production in the United Kingdom suffered its most severe contraction in 1930, and that the rate of shrinkage was—even disregarding the little hump between the autumn of 1931 and the autumn of 1932—smaller for 1931 and still smaller in 1932, the movement retaining its comparative mildness throughout. A smooth curve fitted to the German figures from the middle of 1930 to the end of 1932 would display a monotonically decreasing rate of fall, shading off into increase. American industrial production declined for 1932 as a whole very much less than it did in 1931 and, owing to the upturn at the end, the average rate of change within the year would also be smaller. But the contraction at the beginning of 1932 was (in percentage rate) the most serious of all, and whether the decline of 1931 was milder than that in the second half of 1930 is a matter of index construction.[3] These irregular-

[1] Electrical power production did, however, strike a plateau during the two middle quarters of 1932, before it took another dive. As has been mentioned, sales for domestic use continued to increase even in 1932.

[2] See, for example, D. Westcott, *op. cit.*, p. 256, or our own Chart XLII. For Germany Miss Westcott's curve is better than ours. The total decline from the 1929 peak to the trough was, of course, much greater in the United States than in most countries. This is certain, in spite of all the doubts about comparability. Mr. Bliss (*op. cit.*, p. 2) estimates it at 53 per cent, while for Germany the corresponding figure is 43 and for the United Kingdom (on quarterly data) 22 per cent. We will add the percentage fall of crude steel production for the first 9 months of 1932 as compared with 1929: Germany, 66.4; Great Britain, 46.3; United States, 76.5.

[3] According to the index chosen for our chart, decline for the first half of 1930 was no less precipitous. But this is clearly out of keeping with the general aspect of business at that time.

ities may, however, be partly accounted for by the specifically American difficulties in the sphere of credit and banking.

We cannot stay to note various other points of interest.[1] One fact only which sheds much light on the nature of the process cannot be passed by, *viz.*, that the depression acted as an efficiency expert. This holds true of all three (and other) countries, but it is particularly in evidence in the United States. Output per man-hour, which may be roughly said to have increased by 22 per cent from 1923 to 1929, surpassed in 1932 the 1929 figure by an amount that will greatly vary according to the indices entering into the computation, but may plausibly be put in the neighborhood of 20 per cent.[2] This was, of course, not only due to rationalization under duress in the concerns that continued operations, but also to the shutting down or permanent elimination of others, which may as a broad rule—though, as we know, by no means always—be assumed to have been less efficient. The second component, however, enters our model no less than the first. More rigorous selection of the workmen employed or to be employed may also have had some, the mere underutilization of fixed factors cannot have had significant effect—the latter factor is likely, under the conditions of modern industry, to have worked the other way, at least in many cases. Reference to Chart XLIII is all that is necessary as regards the behavior of group indices. It was as we should expect, foods and perishable commodities in general keeping up comparatively well throughout the bottom of the depression.[3]

For most countries total industrial as well as manufacturing production experienced a beginning of recovery, as small as we should expect,

[1] See, for example, Charles A. Bliss, *op. cit.*, p. 10, for the wide dispersion of percentage changes 1929 to 1932 in individual items. Note the increase in refrigerators and rayon and the particularly sharp decrease in railroad cars, locomotives, pig iron and iron ore.

[2] Professor Mills (*op. cit.*, p. 4) arrives at 12 per cent, Mr. Bliss (*op. cit.*, p. 6) at 21 per cent (manufacturing only), which in the second publication quoted before he reduces to 18 per cent. See the comments of both. It is in accordance with our view of the processes of negative phases that, as both authors state, this increase was not due to any significant extent to "revolutionary" innovations. But if both point to the decline in the production of machinery between 1931 and 1932 in support of the contention that installation of new equipment was not a dominant factor in that increase in output per man-hour, we must not forget that installation of new equipment exerts its influence with a lag. This is so even within the individual concern, but still more in industry taken as a whole, because the process of adaptation and elimination of less mechanized or otherwise less efficient concerns, which is the backbone of depression, is a slow process.

[3] For details on the behavior of household consumption, see again A. R. Tebbutt, *op. cit.* In particular, it is interesting to note that deflated sales of furniture at department stores in 1931 were below 1929 by no more than about 12 per cent. Toilet articles and drug sundries even kept their dollar volume substantially intact. Cigarette consumption did not decline substantially before 1932, when it still kept about the 1928 level. Gasoline consumption rose in 1931 and fell in 1932 by only 10 per cent.

in the second half of 1932,[1] which slackened toward the end of the year, when, as we would say, the last Kitchin of the Juglar turned into recession. Such a relapse at that juncture is in itself no problem. The majority of countries for which indices are available display it, but not Germany—nor France, where, however, industrial production embarks upon a decline in the middle of 1933—whose production moves up steadily and strongly from the third quarter of 1932 to the middle of 1934. In the United States production of manufactures and mining as measured by the seasonally adjusted index of the Federal Reserve Board increased substantially during August and September—from the July low of 58 per cent of the 1923 to 1925 average to 66 per cent—and went on at that level in October; then, after a slight setback, regained it in December. It is important to note that it was the activity of cotton, woolen, silk, rayon mills, shoe factories, and the like which was responsible for the increase in August, while automobile production still declined and steel and lumber industries did not show even seasonal advance. In September, though the steel industry expanded a little—it then reached 20 per cent of capacity during the first three weeks of October—the same general features characterize the situation. In October, automobile production increased, but there was still little activity in investment industries. This is in accordance with the usual pattern. We know that in a four-phase cycle recovery from the lower turning point does not typically start either by innovations or, more generally, investment, or by firms' borrowing but exclusively by moves, from an indefinite number of points and within the existing framework of plant, equipment, and balances, toward a neighborhood of equilibrium.

It remains to account for the upturn which occurred in the industrial production of this country and of Germany, but not in that of the United Kingdom, at the beginning of 1931. In this country more than in others stock prices, pay rolls, loans, velocity of deposits, and department-store sales increased along with production, while employment at least ceased to fall for over 4 months. Readers may well feel that we need not bother about this intermezzo, for it is easy to understand that so long a decline should be interrupted by temporary rallies. Optimistic anticipations of people about "recovery being around the corner" may also count for something in the explanation of a phenomenon of this order of magnitude. But there may be more to it. No recovery was due as yet, but a progressive abatement of depressive symptoms was. The elimination, by

[1] The indices of world production of the League of Nations (excluding Russia) and of the Bureau of Agricultural Economics (N. J. Wall, *op. cit.*, p. 2) turn up exactly in the middle of the year. So do the Austrian, Belgian, French, and Swedish indices. In Italy and Hungary the upturns occur a little earlier. The Polish index rises from the beginning of the year, but falls to a new low in December.

the processes of depression, of untenable situations and of obstacles that give way only under duress, was partly accomplished. Some adjustments in the cost structures of the kind noticed in our description of German events of 1930 may have given an impulse to individual firms and industries. If so, subsequent vicissitudes would have to be explained primarily in terms of accidents and external factors and the first half of 1931 would, in this case, give us a fair idea of what the rest of the depression would have been without them.

2. *Incidents, Accidents, and Policy in Germany.*—During the first half of 1931 one of those political events occurred which, at least in their precise form and timing, we cannot but consider as purely fortuitous, whatever our theory of history may be. Suddenly bursting upon an unprepared world, the plan of an Austro-German customs union, naturally interpreted as the forerunner of political union, was not, when proposed in March, met by either of the two methods that would have, temporarily at all events, prevented any further consequences, *viz.*, resolute opposition or resolute acceptance, but allowed to develop into a source of irritation and apprehension until, after protracted blundering and floundering, it met its inglorious end on Sept. 3, which dealt a fatal blow to the prestige of the last German cabinet that believed in action within existing treaties. Under ordinary circumstances this affair would, however, have remained in the political sphere and at first it seemed that it would. General improvement continued, the Reichsbank's gold stock increased somewhat, it was still possible to borrow abroad, and even in the first days of May, 120 million marks of stock of the newly founded Berlin Power and Light Company were placed with a foreign syndicate. But then, the opposition to the customs union gathering momentum, foreign balances began to make for home—no political lead had to be given in order to effect that[1]—and this was bound to produce difficulties in the English and breakdown in the German market, which so largely relied on them for current financing. In the eight weeks from the end of May to the middle of July, Germany lost at least 2½ billion

[1] An additional shock was imparted by the suspension of the Austrian Kreditanstalt, the desperate situation of which became known to the public on May 11, 1931, and only a few days earlier to the directors. But the importance of this event seems to the writer to have been overemphasized. No doubt the failure of that famous institution, though then only a shadow of its former self, was apt to make a profound impression throughout the world, particularly because of its connection with the house of Rothschild, accentuated as this connection was by the fact that the head of the Viennese branch of that family—the private banking house S. M. v. Rothschild & Co. was not, however, directly involved—happened to be its president. But the quantitative importance of the failure, however serious for Austria, was hardly sufficient to exert any considerable influence on the course of things in the world at large or even in Germany. Declared losses—swallowing up, it is true, both capital and reserves—were about 20 million dollars.

marks—not counting the credit of 100 million dollars extended to the Reichsbank by the Bank for International Payments, the Bank of England, the Bank of France and the Federal Reserve Bank of New York on June 25—and the Reichsbank's stock of gold and foreign exchange exclusive of the proceeds of short-term emergency credits fell during the year by about 2,200 million marks to 530 millions (middle of December).[1]

Some aspects of this situation having been dealt with in the preceding chapter, we need only notice the broad outlines of the consequent catastrophe of Germany's financial structure, which spread paralysis throughout her economic organism besides destroying a number of fundamentally unsound concerns.[2] The Darmstädter and Nationalbank was closed on July 13 after a run which followed upon foreign withdrawals and the failure of an important concern financed by it, and a general run on banks ensued. Banks were closed by government decree and, even after reopening, did not resume unrestricted payments to depositors until Aug. 5, while the decree (July 18) "against the flight of capital" ushered in the period of exchange control, which was tightened on Aug. 1 and has since become ever more stringent to this day. Another leading bank, the Dresdner, had to be reconstructed by the federal government without actually failing.[3] Savings banks were in a still worse position as to liquidity, but resumed payment on Aug. 8. Events on the stock exchanges, though they were closed from July 13 to Sept. 3, were less catastrophic than might be expected. There were shares which did not fall by more than 10 per cent within the year, and after the shock imparted by the devaluation of the pound there was some recovery during the rest of the year.

[1] The "standstill agreement" of Aug. 19, effective from Sept. 1, following upon a period during which Germany discontinued her foreign payments—first without and then with the informal consent of her chief creditors—of course, regularized but did not stop the outflow of gold and foreign exchange, which amounted to over 500 millions in the last 3 months of the year. Payment of foreigners' mark balances and various lacunae in the standstill agreement caused further loss, which it is difficult to estimate but which was partly made up for by the favorable balance of trade.

[2] Losses on ill-conceived ventures did not greatly affect creditors in the cases of the Karstadt and the Linoleum concerns, but the case of the Blumenstein concern, which led to default on the 1 million-pound loan of the Bank für Textilindustrie, was more serious. Still more so was the bankruptcy of the Norddeutsche Wollkämmerei, which owed 240 million marks, the Darmstaedter Bank being the chief sufferer. This bankruptcy occurred in June, as did the difficulties of the Nordstern insurance company, which was, however, saved. October brought the breakdown of the Schultheiss-Patzenhofer concern, which, though a brewery, had entangled itself in enterprises in the fields of cement and textiles.

[3] Also the Schroederbank suspended payment on July 20. Otherwise, there were no major bank failures, though of course it is impossible to say what would have happened without the "bank holidays" and the subsequent restrictions.

That business transactions were for a time not only hazardous and unprofitable but in many cases impossible, stands to reason. All the more important is it to stress the exceptional and extra-economic character of the circumstances which caused the monetary mechanism to produce such complete disorganization. The case teaches nothing about the working of the gold standard and the merits or demerits of the classical or any other theory about price levels, interest rates, and gold movements. All that the political factor had put out of gear.[1] Foreign credits had financed German business to an extent that would, but for the political factor (Chap. XIV, Sec. C), be inexplicable and is altogether unique. They left Germany not under any of those stimuli which are inherent to the mechanism of international finance but in utter disregard of them. It follows that, since the efflux of gold and the liquidation enforced thereby did not mean what they do mean in the ordinary course of commercial fluctuations, there was no reason to react to them in the usual way, *viz.*, by restricting credit and raising the rate of interest, and that the natural thing to do was to try to replace the working capital that was being torn out of the German organism by an expansion of Reichsbank credit and to leave the foreign value of the mark, for the time being, to itself. Closure of the banks and many other embarrassments could also have been avoided by this method, which, involving nothing but the substitution of a fiduciary basis of credit for the gold basis that had been destroyed by extra-economic events, would in no sense have been "inflationary." Many observers believed at the time and most of them believe now that the government and the Reichsbank were completely blind to this and that, actuated by an uncritical belief in an outworn fetish and oblivious of anything else, they clung to the gold standard and precipitated and intensified the catastrophe by punitive measures. It is suggested that this was not so.

True enough, government and Reichsbank were in no mind and in no position to declare for, and to act consistently on, an "expansionist" policy. They were not prepared to face the domestic and international obloquy which, at a time when abandoning the gold standard was not yet made respectable by the example of England and America, would in that case assuredly have burst upon them. Fears that the foreign value of the mark would be attacked by speculators and fall to lows which would then tend to induce real inflation, and that at home, the fetish once removed, there would be no halt to really inflationary expansion of the circulating medium, were not unjustified. Respect for treaty

[1] Given that fact, it may, of course, be argued that that mechanism cannot be relied on and that a suitable policy and theory of precisely that situation must be worked out. This is what—in a nutshell—the rest of this paragraph attempts to do. We are concerned only with diagnosis. The writer has no intention of arguing for "classical" views.

obligations, promises, and recent enactments counted for something. And, what perhaps weighed most of all with the leading statesman, that remedy might have barred the way toward fundamental normalization,[1] which had been embarked upon with such difficulty and was to preclude all possibility of the recurrence of similar situations. He, therefore, kept to the policy inaugurated before—the emergency decree of June 5 marks another step—dealing with every emergency that confronted him in the hope that it would be the last of its kind. Nor was this hope without justification. In June it seemed to come true: President Hoover's moratorium plan, though in its nature no remedy for the business situation of the moment,[2] might have brightened the atmosphere and put a stop to the influence of the political component of the situation. If it had, Germany's position would have been all the better for having adhered to financial decorum. It did not. But when that became clear, the price exacted by official adherence to an orthodox policy had been largely paid.

This, however, expresses but one aspect of the policy of those months. Closer scrutiny shows that the other, the expansionist one, was by no means absent. We start by recalling the general features of the international business situation down to the end of May. In accordance with them, money rates fell everywhere—the Dutch bank rate was reduced to 2 per cent as late as May 16. The unrest among short balances, which put an end to this, was originally confined to Germany (Austria and Hungary being affected in sympathy). At first the Reichsbank did not react at all. It was only after having lost about 600 millions of gold and exchange from June 1 to June 11 and when it was faced with panic demands on the twelfth and the thirteenth, that it raised its rate from 5 to 7 per cent. In doing so it acted on the hypothesis that this would induce member banks to use their own reserves and impress at least some of the components of that demand. Tension, in fact, relaxed and on the strength of the hope raised by the Hoover moratorium no further restrictions were resorted to. The Reichsbank notes were, owing to the credit of 100 million dollars mentioned above, still covered to 40.1 percent at

[1] Nobody can say whether it would have. It may be plausibly argued, especially from comfortable combination room armchairs, that a bold announcement of a policy of expansion would have made normalization easier. Given German conditions, the writer does not share any such belief. But it may well have been a fifty-fifty chance.

[2] The plan, proposed on June 20, met with French opposition and was not definitively adopted until August 11. To this delay it has become a tradition to ascribe its failure to take effect. But to the writer the case seems rather to illustrate the limitations of the "psychological" factor. The plan was certainly calculated to remove a cloud from the horizon. But to the individual businessman, who the writer believes is less swayed by irrational moods than is commonly believed, it held out little promise for the moment. This is the reason why it produced nothing but an ephemeral stock exchange boom.

the end of the month, in spite of the new wave of withdrawals that was incident to the rumors about the Darmstaedter Bank. With the crisis gathering momentum and gold holdings falling precipitously, the Bank indeed went to 10 (July 15) and 15 (Aug. 1) per cent—from which it then receded on Aug. 12 (to 10 per cent), on Sept. 1 (to 8 per cent), and on Dec. 9 (to 7 per cent). But at the same time it did replace the gold asset by bills and advances. Excluding the bills that were sent abroad for rediscount, it held by Nov. 30 over 4.2 billion marks of bills, treasury bills, and advances (Lombard), as against less than 2 at the end of May.[1] This was made possible by the suspension of the clause concerning the 40 per cent cover of bank notes and by the foundation (July 26) of the Acceptance and Guarantee Bank, which merely served to create financial paper for rediscounting. Thus the authorities went as far as was compatible with upholding the foreign value of the mark—further, in fact, for that value was upheld by measures that rendered it even then largely nominal—and less pressure was exerted on business than is commonly believed. That the severe slump in production and general business which occurred in the third quarter of the year was primarily due to that monetary crisis we do not by this statement call into question; but it was due to the whole complex of causes and consequences of that crisis and not to central bank action or interest rates in particular. On the contrary, these played no role among the causes and but a minor one among the consequences.

Neglecting minor difficulties, weakness of the mark in foreign markets among them, we may say that the stage was set for some improvement when England abandoned the gold standard, which for Germany was, of course, a serious matter.[2] The question why Germany did not follow suit like the Northern countries has never been answered quite satisfactorily.[3] Perhaps a partial answer may be found in the consideration that some of the effects of devaluation can also be secured by scaling

[1] Liabilities of the six big Berlin banks decreased by about 3 billions during the same period.

[2] In some industries the flow of orders from England suddenly stopped and many cancellations were received. Immediate effects were, nevertheless, not great. Ulterior effects are difficult to estimate. We will pass by the stock exchange and banking events of September, which also were among the consequences and eventually led to Germany's application for the convocation of the Young Plan Committee. Owing to help extended, especially from the Federal Reserve Bank of New York, the Reichsbank weathered the storm comparatively well. At the end of October its notes were still covered to nearly 30 per cent.

[3] The writer understands that it has been answered, by a man who ought to know, to the effect that England "would not consent." But what could she have done? Nor would it be satisfactory to repeat the string of arguments glanced at above. For England's example made all the difference, and linking the mark to the paper pound would have staved off the danger of disorganization through inflationary fears.

down all prices and incomes (see below, Sec. E). It might, hence, have been argued that government would only have to go on with its policy in order to achieve a similar end by another route. This is in any case what they attempted to do by various measures, among which the emergency decree of Dec. 8, reducing wages and interest charges,[1] was the most important. Whatever may be thought about this—the writer is far from wishing to defend it—it was not simply nonsense nor, as can be easily inferred from the similarity with devaluation, *was it deflation in any ordinary sense.* And no dire consequences followed. Production during the first quarter of 1932 was indeed at a much lower level than during the first quarter of 1931—although by less than the first quarter of 1931 was below that of 1930, in spite of the greatly increased impediments of international trade, which reduced value of total exports to little more than half of the 1929 maximum—but decline had come to a stop, the Berlin Institute figures corrected for seasonal being for those 3 months (1928 = 100): 52.9, 55.1, 56.7 (and a little higher for the second quarter). There was a relapse to a new low in July and August, after which the upswing definitively set in.

These figures have been mentioned because they bear upon the remaining question, whether that upswing can have been due to the different policy that was adopted in the second half of the year. The negative answer they clearly suggest—there is no earthly reason to believe that the movement along the bottom in the first two quarters should, barring accident, have been followed by anything else but recovery—is supported by a survey of what was actually done. Some relief was given to the taxpayer by the not uninteresting measures embodied in what was termed the Papen plan,[2] and more important than the actual relief afforded was the spirit of this policy, which aimed at nursing the system instead of harassing it incessantly. A public works program was also inaugurated, subsidies—not altogether absent, however, under the preceding government—were given for various purposes, especially for the repairing of houses, and industrial construction was encouraged. But quantita-

[1] The decree of Nov. 17 had already extended help to agricultural debtors, the situation of whom was indeed becoming desperate. This decree may be characterized, as may some measures later on taken elsewhere, as an attempt at regulated bankruptcy, again the same thing which devaluation aims at by another technique. This measure and the anticipation of similar ones intensified the severe fall in the price of German bonds, whether payable in marks or in a foreign currency, which occurred both at home and abroad in the last 2 months of the year. In New York German 6 and 6½ per cent bonds fell below 20 per cent by Dec. 4. But the incessant stream of restrictions also contributed toward making balances in and claims on Germany all but valueless to the foreigner.

[2] Its most interesting feature consisted in the issue of certificates for tax payments which, as it were, embodied future tax remissions and were made eligible for discount at member banks and the Reichsbank (*Steuergutscheine*).

tively all that was palpably inadequate to produce a contracyclical movement or even to lead out of depression. No observer of contemporaneous developments has ever claimed that such homœopathic treatment could do that. Ample justice is done to that policy if the steadiness of the subsequent recovery is, in part at least, recorded to its credit. To this it seems in fact to be entitled precisely on account of its moderation, which prevented hectic spurts with consequent relapses. But it would be absurd to attribute the turn of the tide either to the mechanical effect of the few dozens of millions by which expenditure can at best have been increased before the definitive upturn occurred, or the anticipations which may have been induced.[1] There was, it is true, the Lausanne agreement (signed July 9, 1932), which reduced the German liability on reparation account to 714 million dollars. But apart from the fact that we are apt to exaggerate the effects on short-run business behavior of events that do not immediately alter the data with which the individual firm works, it is wrong psychology to argue that Germans must have felt relieved. By that time most of them resented the idea of any further payments, and this attitude had been strengthened by the international committee's report (Dec. 24, 1931), which had stated Germany's complete inability to pay reparations. The effects of the Lausanne agreement were, hence, to say the least, doubtful and there can in any case be no question of their having more than counterbalanced the really and directly depressing effect that emanated from the steadily thickening fog of hostile tariffs and quota. Comparative normalization of monetary conditions was, of course, more important. The Reichsbank rate went down to 4 per cent in the course of 1932. But this cannot be listed among external factors, since it was the natural concomitant of the passing of deep depression and, if anything, overdue.

3. *Incidents, Accidents, and Policy in the United States.*—In this country the principles of a recovery policy began to take shape as soon as the plateau on which business moved during the first half of 1931 gave way. This new dive in the third quarter of 1931, which was deeper than we should have expected, was but to a minor extent due to the unpleasant experiences this country had had in the role of a creditor nation. Losses from defaults of foreign debtors on long-term loans and from the depreciation or worse of other long-term investments, however considerable, were small relatively to the size of the organism.[2] More

[1] The date of the decree which put the Papen plan into force is Sept. 5. If the September figure of the index of production was due to that modest though well-conceived measure, Mr. von Papen has indeed wrought a miracle.

[2] But such considerations as that the value of shares of foreign concerns was only 1.5 per cent of the total value of shares traded on the New York stock exchange and that the former only participated to about the same extent in the total depreciation, which was

important embarrassments followed from the freezing or worse of short credits to foreign banks, because this paralyzed the first line of defense against the withdrawals of foreign balances. But until September 1931 there was hardly any sign that serious difficulties would arise on that score. Repatriation of part of those balances was to be expected, because there was little to do for them here. Throughout the summer this was, however, more than compensated by movements in the opposite direction and by the middle of September the figure for total monetary gold stock stood at a maximum of 5,015 million dollars: the golden armor of the United States currency seemed to grow stronger as the Federal Reserve System serenely sailed through those troubled months.

For the withdrawals which began on Sept. 20, the day on which the Bank of England suspended gold payments, the writer has no other explanation to offer but that this event suddenly convinced the world that no currency was to be trusted and that it thereupon discovered weaknesses and inflationary possibilities in the American position, among other things the possibility of a domestic run[1] and the comparatively small amount of gold that was "free" within the American definition. With this the fact accords well that it was in the first instance the European central banks which made haste to convert their holdings of American exchange into gold. The gold exports to France, Belgium, the Netherlands, and Switzerland which ensued—the reserve banks lost 722 million dollars (exports and earmarks) to Oct. 22, not in itself a very serious matter—had not under these circumstances the classical but exactly the opposite effect: there was a "crisis of the dollar" during which forward dollars in Paris fell to a discount of from 5 to 10 per cent, President Hoover's Second Plan (Oct. 6) becoming another argument, although perhaps no *reason*, for feeling pessimistic about the dollar. But on Oct. 22 Mr. Laval arrived in New York. And the fact that his and Mr. Hoover's *professio fidei* sufficed to stop the efflux and even to reverse it proves the comparative innocuousness of the intermezzo. Moreover, French private balances had by then been to a great extent repatriated, and the Banque de France consented for the time being to discontinue withdrawals on condition (?) that she would be spared a repetition of her English experience. Finally, the shock troops of international speculation garrisoned

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roughly 58.5 billions as between September 1929 and December 1931, of course tend to understate the real extent of the relative importance of total losses on foreign industrial investments.

[1] So far as gold is concerned, this possibility did not materialize to a significant extent at any time during those 2 years. Total gold and gold certificates in circulation kept, while displaying a bulge at the end of 1930 and the beginning of 1931, below the level of 1927, though apprehensions were entertained early in 1932. It was different with "money" in circulation. In this item the big increase occurred in the second half of 1931.

between Amsterdam and Zurich—500 million dollars is perhaps an exaggerated estimate, though it comes from good authority—had for the time being a more interesting object to attack. In (February and) May and June 1932 a similar wave of withdrawals occurred, though on a smaller scale. Reversal in the second half of the year this time left the country's total monetary gold stock slightly increased—release from earmark and domestic production, etc., more than balancing exports—while it had decreased, though only by 133.4 million dollars in 1931.[1] This practically disposed of the rest of French claims.

With due respect to "psychology," no major feature of the conditions in this country can possibly be ascribed to either those gold movements themselves or such effect as they had (see below) on the structure of interest rates. But another element asserted itself more and more as 1931 wore on, *viz.*, the debt and especially the mortgage situation. Its importance is not adequately measured by the number of bank suspensions, although it was formidable: in 1931 2,298 banks had to pull down their shutters or, more significantly, 1,702 from September 1931 to January 1932, the period of the second epidemic,[2] which was, of course, a major factor in the general slump of the first half of 1932 and the then soaring figure of business failures. Nor is it adequately measured by the losses incurred by banks and other creditors on bad debts. Certain classes of the latter, debts from installment sales for instance, behaved remarkably well. But the strain and drain of the repayments that were successfully made—Professor Fisher's debt-deflation—and the general awareness of the fact that the value of collateral was impaired and the net worth of so many people negative, partly enforced and partly suggested restriction of operations all round, pressed on prices, decreased employment. There is nothing astonishing in the fact that this situation did not assert itself fully until about a year after the setting in of depression in our sense. It takes time (and an altogether abnormal burden of debt incurred) for it to develop and for people to realize it and to cease to act on the hope of speedy recovery. And it will then—this is not the only case of its kind as an analysis of 1875–1876 would show—cause dents and slumps in the interval in which deep depression should be giving way to more gentle descent.

This being the diagnosis of the nature of American "incidents and accidents," how far were their effects plus the fundamental processes of depression influenced by recovery policy or anything else government and federal reserve banks did? That policy must, again, be defined in terms of actual measures and not in terms of disconnected, often—really as

[1] Figures from *Federal Reserve Bulletin* or statements. The minimum in the total of monetary gold occurs in June 1932, when it stood at 3919 million dollars.

[2] From February to October 1932 death rate was comparatively low.

well as apparently—contradictory, always inadequate pronouncements. What strikes us first is the handling of the international situation by the coordinated efforts of the government and the reserve system with a view, (*a*) to avoiding or mitigating breakdown of foreign credit structures by direct help or by refraining from pressing American claims; (*b*) to relaxing tension by the moratorium of political payments; and (*c*) to minimizing repercussions on the domestic money market. As regards the last point, the aim was achieved to a greater extent than is generally believed. We have seen that prompt action had, soon after the crash of 1929, reduced money-market conditions to a state of ease which—for "natural" reasons—prevailed through 1930 and still more so in the first part of 1931. The rate of the Federal Reserve Bank of New York went down to 1.5 per cent on May 7. Nevertheless, the reserve system bought from June to August another 130 millions of governments, with the result not only that member banks in the main centers accumulated considerable excess reserves and that bond yields were forced down, but also that new financing revived.[1] But the efflux of short balances after Sept. 20 put member banks into debt again and also forced many of them to sell bonds. And until the Glass-Steagall Bill (signed February 1932) removed the obstacle to their borrowing from reserve banks, which lay in the scarcity of eligible paper, by permitting loans on hitherto noneligible collateral, and the obstacle to further open-market purchases of the reserve system by permitting governments to be used as collateral for Federal reserve notes, that is, through 5 months, there was indeed that "deflationary pressure" of which so much has been made by some students of the depression. But this pressure was altogether unequal to the inferences that have been drawn from it.

Although the rediscount rate of the Federal Reserve Bank of New York was, in obedience to the rules of financial tradition, raised to 2.5 per cent on Oct. 9 and to 3.5 on Oct. 15 and kept there to Feb. 26, when it was reduced to 3 per cent,[2] rates charged by member banks to customers, which had reached a monthly minimum of 3.93 per cent for September 1931, increased to a monthly maximum of but 4.72 for March 1932 (New York City; *Federal Reserve Bulletin*). This is the real test of the severity of the pressure exerted, and on the strength of the most common experience it disposes of the idea that there was discouragement

[1] While this was going on, however, production and employment, from June on, decreased strongly. Once more, such an experience, while not in itself sufficient to dispose of certain theories about the efficacy of either rates or open-market operations, should not be lightly brushed aside. In this case it cannot be urged that the power of the spiral was unbreakable. For 5 months had preceded during which business had been "looking up."

[2] Buying rate on acceptances was reduced on Jan. 12. Rediscount rate returned to 2.5 per cent on June 24, in sovereign disregard of the then gold outflow.

of industrial and commercial business. Immediately, however, after the president's signature had been affixed to the Glass-Steagall Act, the reserve system embarked upon the biggest open-market operation in its history, buying $1.11 billion governments from March to August, driving down rates all round and piling up excess reserves, more than balancing the effect of the gold efflux in May and June which this policy produced. This, of course, is the point at which a *post hoc ergo propter hoc* argument is most likely to suggest itself. It need not, however, detain us, since the redundance of the facilities created is obvious.[1]

The National Credit Corporation (articles filed Oct. 13, 1931), the Home Loan Banks (bill containing the Glass rider[2] signed July 22, 1932) and the Reconstruction Finance Corporation (the original bill signed Jan. 22, the extension, Emergency Relief and Construction bill, July 21) represent the attempts made to mend what, in fact, were the most important consequences of domestic "accidents and incidents," the removal of which would allow the system to recover. The inadequacy of the first measure to improve materially, let alone to save, the banking situation—or else to make the economic system immune to it—is obvious, as are the limitations of the second, which, however, within its limits did something toward improving things in one sector of the mortgage embroglio. Both were far surpassed in importance by the third, which, especially as extended by the Emergency Relief and Construction Act, pegged a number of tottering structures, thus stopping up some sources of infection from which cumulative disorders would otherwise have spread, especially among banks and trust companies, railroads, building and loan associations, insurance companies, and mortgage loan companies. By Sept. 30, 1932, the grand total actually advanced—not merely authorized—amounted to nearly 1.2 billion dollars, of which 185 millions had then been already repaid, and the corporation had issued 750 million dollars of 3.5 per cent notes, 600 of which were taken by the Treasury. These few data[3] suffice to indicate the aims and financial nature of the measure during the first 8 months of the Corporation's life and to appraise the kind and extent of the influence it can have exerted on the economic processes around the lower turning point of the index of production. Primarily intended as a support to banks and cognate institutions, and as an agency to carry part of the burden of loans that were noneligible

[1] This does not necessarily imply adverse criticism of that measure. To create redundant facilities in order to provide for any requirements recovery might entail may be a reasonable thing to do, even though not likely to *induce* an upward movement in a business community that does not use the funds it already has or could have.

[2] The Glass rider conferred an additional circulation privilege on government bonds which extended the national bank-note issue, and would have been mentioned in the preceding paragraph if it had been thought of sufficient importance.

[3] They are from the Corporation's third report to Congress.

in the sense of the reserve bank legislation,[1] its scope naturally included the only type of big business that was seriously threatened, railroads. The rationale of this is as obvious[2] as are the considerable, if negative, results: additional disasters were averted, but not much positive impulse was imparted by it.

Also something was done under this scheme, especially in its extended edition, for agricultural credit institutions—new regional agricultural credit corporations were created, for instance—for financing the carrying and marketing of farm products and so on, and this worked in with institutions and policies previously established for the benefit of the agrarian interest. But as compared with the plight of a large part of the agrarian sector, all that was done during those two years was surprisingly inadequate. Since 1929 the index of farm products at the farm had fallen by over 60 per cent.[3] Total figures of gross revenue from agricultural production—which, according to the estimates of the Department of Agriculture, was about 9.4 billion dollars in 1930, somewhat less than 7 in 1931, and about 5 in 1932—and nation-wide indices of land values—as of Mar. 1, that index was 115 in 1930, 106 in 1931, 89 in 1932 (1912 to 1914 = 100, maximum of 170 occurring in 1920)—do not tell the whole tale. For a minority, but a nonnegligible one, net income must have been negative, and for a considerable minority net worth of the farm must have been

[1] The Emergency Relief and Construction Act also, amending Sec. 13 of the Federal Reserve Act, authorized Federal reserve banks to discount paper for individuals, partnerships, and corporations unable to secure "adequate" credit accomodation from member banks (in our sense). This move to force member banks into lending freely was followed up in the banking legislation of 1933, 1934, and 1935. In itself but an approach to European practice, it was part of a policy for which early American banking experiences must have seemed ideal, and a concession to the theory—which is fundamentally wrong—that banks hold a key position at the beginning of revival and that if their loans do not expand this can only be due to their aversion to lending. But since the new powers were so very soberly handled by the reserve banks, there is no need for us to go into this matter.

[2] It was not so, however, for the man in the street, who did not see any relation between his own fate and what he took to be just a contrivance by which a capitalistic-minded government tried to protect fellow capitalists from the consequences of their own follies, leaving the suffering masses to shift for themselves. This attitude, which asserted itself very soon in Congress and elsewhere and was one of the first symptoms of the anticapitalist storm that was brewing, was strangely neglected by the administration.

[3] Nothing, of course, can be concluded from that fact alone or even from it plus the fact that the index of the goods bought by farmers fell only by something over 30 per cent. As we have seen before, this in itself may spell suffering but not breakdown and must be considered in connection with the agrarian revolution of the twenties. But it spells catastrophe when combined with the fact that in 1930 "39 per cent of the owner-operated farms of the United States were encumbered with mortgages averaging 40 per cent of their value. This means that about a fifth of the farms of the United States in that year had mortgages representing over 40 per cent of their value." (Professor John D. Black. The Agricultural Situation, January, 1933, *Review of Economic Statistics*, Feb. 15, 1933).

zero or less. Foreclosures increased rapidly and so did the proportion of forced sales that were due to tax delinquency.[1] Hence, it is clear that the process of depression was in the agrarian sector allowed to go on even in directions in which it would have been most easy and for a conservative government, one would think, most imperative to stop it.

The Emergency Relief and Construction Act (Sec. 1, Title I) marks a new departure in authorizing expenditure for relief and work relief, a little more than two years after such a measure was indicated according to our schema, or a little more than one year after the plateau of 1931 had crumbled. No measurable effects can, however, have emanated from the 35.5 million dollars which were made available and the 14.2 millions which were actually spent for that purpose to the end of September 1932. The mentality which had such difficulty in reconciling itself to this—anything but novel or radical—course of action and the persistence of which is as curious as the violence of the reaction it produced, also asserted itself in the incessant appeals of the chief executive for retrenchment of public expenditure and increase of taxation (*e.g.*, messages and pronouncements of Dec. 1, 1931, of Jan. 8, of Mar. 8, of Apr. 4, and of May 5, 1932.)[2] In some cases there were special reasons for this, *e.g.*, the weakness of the dollar exchange in March and at the beginning of May 1932. But in all cases account must be taken of the fact that that mentality was, until it changed into its opposite, a datum of the situation which it was hardly possible to modify to just the extent that would have seemed rational. Under these circumstances a "budget crisis" was no matter of indifference. And adherence in principle to what were considered sound methods of finance was not unlikely to help recovery as well as to facilitate fiscal normalization after the depression, provided it went not beyond what was necessary to convince everybody that the budget would automatically be balanced *in future* while for the time being expenditure was allowed to unbalance it. This is precisely what the administration actually tried to do. Owing to the insuperable prejudice that defeated the sales tax (Mar. 24),[3] little came of the first part of the program, and the tax bill signed June 6 and the omnibus economy bill signed June 30, 1932, cannot have had any but reassuring "psychological" effects. But the second part was all the more fully carried into effect. According to an estimate used before, the net[4] Federal income-generating expenditure amounted

[1] Professor Black, *op. cit.*, p. 10, puts that proportion as high as one-third.

[2] It also asserted itself in the veto of the Garner-Wagner Relief Bill, which the writer does not find easy to understand.

[3] Without any undesired effects either during or after depression, 2 billion dollars could have been raised by it with which to service and extinguish a depression expenditure of from 10 to 20 billions.

[4] Arthur D. Gayer, *op. cit.*, p. 391.

to 1,748 million in 1931 and 1,646 million in 1932 (calendar years). There cannot be any doubt that this was the most directly effective part of the government's policy—the real Emergency Relief—which only gained in effectiveness by being coupled with official emphasis on those "sound" principles that at first sight appear to be at variance with it. The inference is that it prevented much potential disaster. Yet since that expenditure—to which, of course, a very low multiplier would have to be applied—did not stop the shrinkage in total outside debits, which fell throughout the year, the inference seems reasonable that, although by partly compensating the influence of Incidents and Accidents it facilitated the turning of the tide, it did not turn it.

We will finally glance at the third epidemic among banks, which belongs—as a belated installment—in the nexus of events we are now surveying, although it ran its course entirely within incipient recovery, lending it for a month or two all the colors of deep depression. It started in November—the banking holiday in Nevada declared on the first of that month may be taken as the starting point—gathered momentum in January and February and was cut short by emergency legislation on Mar. 9, 1933. The suspensions and holidays spread from Feb. 14 on (Michigan; the first states to follow were Indiana, Maryland, Arkansas, and Ohio) until on Mar. 5, almost complete stoppage of banking having greeted the new president on his inauguration, they had to be ratified by Congress. This time agricultural distress, more precisely the agricultural mortgage situation, was not merely a contributory cause but the main one, as is seen from the fact that the hurricane started in the agrarian states of the middle and farther West and then moved to the East, thus collecting the fine for the neglect of the agrarian plight. This suffices to insert that panic into our picture. Its features are well known. Distrust in banks, to some extent coupled with a distrust in the currency, led to indiscriminate withdrawals of deposits and forced the banks in turn to withdraw currency from reserve banks—member banks (in the official sense) withdrew over 1.7 billions between Feb. 8 and Mar. 3—and from New York correspondents who lost almost 800 millions in this way. On Mar. 2 and 3 alone, money "in circulation" increased by nearly 700 millions, federal reserve credit outstanding by nearly 730. Loss of reserves and increase of notes outstanding reduced excess gold reserves of the reserve banks by 1.1 billion dollars to 400 millions. Domestic difficulties were increased by a simultaneous efflux of gold from the country which—partly though not wholly induced by them—amounted to over 270 millions in February and March. The New York Reserve Bank had to rediscount with and to sell governments to other reserve banks. After the banking holiday and under the pressure of the Emergency Banking Act of Mar. 9 (amended by the Act of Mar. 24)

gold coins and certificates speedily flowed back, over 600[1] millions returning to the reserve banks before the end of March, so that their excess gold reserves were, thereby and by the reduction of the amount required to be held against notes outstanding, increased to 1,172 millions. In spite of the restrictions to which gold movements had been subjected, the international position of the dollar was remarkably strong at the end of March. Member banks (in the official sense) holding about 90 per cent of all member bank deposits were reopened by license on Mar. 15. By the middle of 1933 the number of All Banks (including private banks under state supervision and mutual and stock saving banks) operating under license—no doubt many very weak ones among them—was 14,530.[2]

The immediate consequences of that panic, the new spiral it set in motion, do not call for additional comment; but its ulterior consequences cannot be too strongly emphasized. It completely demoralized all classes and, by doing so, fundamentally changed the problem before the incoming administration. Without it—and it was certainly an avoidable incident—recovery policy would have been confronted with an entirely different situation. As it was, the psychic framework of society, which till then had borne up well, was at last giving way. Nobody for the time being foresaw anything but continuing disaster, and everybody was resolved not to put up with it any longer. The talk about impending revolution presumably was nonsense; but it characterizes well the prevailing state of the public mind, which, bewildered and exasperated to the utmost, clamored for political action in redress of what every group in its own way felt to be some grievous wrong. Politicians and "intellectuals," suddenly moved into a position of saviors and judges, had a rich keyboard to play on. But the mentality of the country, the traditions of the victorious party, the nature of the catastrophe that had to be dealt with immediately, and the strength of the inflationist interests united the majority of them on monetary expansion.

4. Deferring further discussion of the English case, we now return to the question whether other American and German time series confirm the location of the bottom of the fourth Juglar which above has been determined mainly from the behavior of physical output.[3] That they otherwise behaved as we should expect, taking account of the incidents and accidents just discussed, is obvious. Money rates in particular do not seem to require additional comment—in Germany the prime bank

[1] The total for all types of currency was $1,185 million, most of which went towards canceling reserve credit—member banks' indebtedness decreased to $545 million by Mar. 29, when New York City banks again held excess reserves.

[2] The total for the middle of 1928 was 25,911 and for the middle of 1932, 18,794.

[3] It should be noticed that industrial consumption of electric power would do equally well, but not total power production.

acceptance rate (*Privatdiscont*) was at 3.88 per cent in December 1933, having steadily fallen from the peak in the second half of 1932 (7.95 for that half year), and in this country the third banking epidemic failed to produce panic rates and only interrupted the downward course for a short time, as the gold panic of September-October 1931 had done: bankers' acceptance rate for 90 days' unindorsed bills was 1⅛ per cent on Feb. 28 and only 2 per cent on Mar. 31, 1933, other rates moving correspondingly.

The Harvard A-curve (speculation: index of prices of all listed stocks) clearly indicates the trough for June-July 1932 and reacts well to the incipient recovery throughout the third quarter of that year. Equally corroborative is the behavior of German stock prices, the index of which increased considerably in the second half of the year, climbing up to a little over half of its value for 1925. But outside bank debits (and dollar volume of department-store sales) continued their downward course, with but an insignificant upward movement in the last (department-store sales in the third) quarter, right into 1933, and thus at first sight seem to cast doubt on our location of the trough.[1] Considering, however, the persistence of the fall in price level and the fact that bank debits were, of course, particularly sensitive to the banking calamity, this does not mean much. Moreover, incipient recovery is, as we know, compatible with some further shrinkage of total dollar volume of business operations. It would be compatible even with some further increase in failures—although in this case maximum of failures actually occurred at the trough. These and other symptoms[2] may be likened to those symptoms of disease which often show most markedly in convalescence. The real question arises with respect to employment and prices.

In Germany the number of employed as per sickness-insurance statistics was (monthly average) 17.6 millions in 1929, 16.3 in 1930, 14.25 in 1931, and a little below 12.2 in the first half of 1932. Then it increased to October (12.9), to fall more than seasonally in December and January—which, it will be recalled, is not contrary to expectation from the experimental schema—before increase had gathered momentum. The number of (statistically visible) unemployed rose by about 50 per cent in the average of 1931, as compared with that of 1930, which was

[1] Value of construction contracts (Dodge) increased, however, nonseasonally in the third quarter, though they declined more than seasonally in the fourth. This is also true of privately financed (mainly residential) construction. See J. B. Hubbard, The Construction Industry in Depression, *Harvard Business Review*, January 1933.

[2] In Germany, for example, household consumption even in physical terms definitely declined in the third quarter of 1932, and the simultaneous increase in the output of consumption-good industries at first went toward replenishing the stocks of wholesale and, to a lesser extent, retail trade. As to monetary terms, turnover of cooperative stores per member declined in the third quarter by 3.04 marks.

3.1 millions. The first quarter of 1932 displays the maximum of over 6 millions, the figure for the second quarter is 5.66 millions, and for the third a little over 5.2. As noticed before and as we should expect, the number of workmen employed throughout fell less and increased[1] less than production, and also lagged behind it. This is equally true of the United States, where the behavior of employment was very similar. The annual minimum, of course, occurs for 1932. More important than this, employment in manufacturing industries began to increase, slightly at first, in the second half of July. The Federal Reserve Board's index then records some more than seasonal net increase for August, though there was decrease in the automobile and allied, as well as in the machinery, industries. Increase spread in September (the index adjusted for seasonal then showed 60.3 per cent of the 1923 to 1925 average as compared with 58.8 per cent in August) and persisted to the middle of November—when employment in the automobile industry increased considerably—after which there was more than seasonal decline in December and January. Unemployment (A. F. of L. estimate) behaved accordingly. As in Germany, however, a new low point occurred in the first quarter of 1933, which in this case is amply accounted for by the banking crisis.

But price levels declined unequivocally through 1932 and for some time after in all countries that remained on the gold standard and in some that did not,[2] and the failure of other series to display trough and recovery in 1932 is primarily due to this fact. Since this might prove disturbing to the reader who has followed so far but still holds on to his habit of associating cyclical phases primarily and even causally with movements of the price level, it is necessary to remind him that the processes of recovery do not require that price level should first rise or even cease to fall. It will be useful to recall how we should expect it to behave at such a juncture, *i.e.*, at the beginning of the recovery of a Juglar (preceded by a Kitchin prosperity) which lies within a Kondratieff depression. On the one hand, although there may be belated price

[1] It will be recalled that this is due not only to statistical causes and to the fact that workmen are not promptly discharged, so that at the beginning production increases simply in function of decreasing short-time or underutilization, but also to the changes in production functions (rationalizations).

[2] Many individual prices, most of the world's staples among them, do, however, display either minima and recovery or that flattening out (amidst "hesitations") of curves which is the characteristic shape at the bottom of a cycle (as did also quantities). This may be observed, for example, in the United States quotations (futures or spot price) of cotton, rubber (which at its low in June was little more than 5 per cent of its annual average for 1913), zinc, lead, copper, iron, and scrap steel. Most of them lost part of their gain in the last quarter—copper, in particular, because of the difficulties in the cartel. Even the wool and petroleum curves flattened out.

reductions—in some cases induced precisely by producers' realizing that, paralysis being over, reductions may now have some effect in stimulating demand[1]—the bulk of wholesale prices will, in fact, recover from panic lows. But, on the other hand, such "correctional" movements are superimposed on a fundamental tendency that works against their effect on the index. We know that, and why, the price level should in every neighborhood of equilibrium be at a lower figure than in the preceding neighborhood, and in a Juglar within a Kondratieff depression this tendency may result in its recovery phase ending up with a price level below that of the lower turning point. Owing to the violence of the break in prices during the preceding Juglar depression, this would not have been likely to happen in this case even without the subsequent efforts to raise prices by political action. But that any rise in prices that may have been due in reaction to depressive excesses was slow in coming about and even that the fall in wholesale prices and in cost of living persisted for several months after the turning point of the cyclical process is neither surprising nor a reason to question our dating, let alone to date the cyclical trough February 1933. It should be observed that this argument is independent of the fact that for this country the bank holidays and the events that led up to them provide a special and, according to our diagnosis, an "accidental" cause for that trough, and therefore suffice to rule out that dating; for although this is true, the fall in price-level graphs also went on in other countries.[2]

Particulars of price movements would merit discussion. We must limit ourselves to a reference to the rich literature on the subject[3] and to the following remarks. First, barring the effects of monetary changes,

[1] Or also by producers' so vigorously responding to an anticipated rise that instead of it a fall ensues.

[2] The influence of the epidemic among banks is not exactly measurable but very visible. The minimum of the cost-of-living index (National Industrial Conference Board) and the minimum of the B.L.S. index of wholesale prices, both of which occur in February 1933, are obviously linked up with it, although these dents lie in a declining interval which may be interpreted in the light of our schema: there was a rally in prices in the summer of 1932, which is absent or practically so in Germany—where, however, the index of sensitive prices increased from 45.3 per cent of the 1913 figure to 53 per cent during the second half of the year—but is well marked in this and some other countries, and which we may associate with the Kitchin prosperity phase at the bottom of the Juglar. The B.L.S. index shows a small rise in July, and many leading commodities advanced considerably in August, while some that had advanced before declined. This up and down continued in September, for which the index showed hardly any change. By the end of September decline had become dominant, and for October the index was one point lower. This decline continued during November and December, and the January figure, 4.2 points below that of August, may already have been affected by the banking crisis. But the fact that there was much greater price stability as compared with 1930 and 1931 is beyond doubt.

[3] Mention should be made, in particular, of Professor F. C. Mills, Prices in Recession and Recovery, 1936.

the fall in price level and in cost of living was remarkably uniform. When all qualifications on the score of comparability have been made, it is still significant to note, for example, that the American and German indices of wholesale prices yield, if 1929 is taken as base year, practically coincident curves and that cost of living fell from 1929 to 1932 by about 22 per cent in both countries. And this is not merely due to the influence of the international prices which enter the indices.

Second, it follows from the argument of this book as a whole and more particularly from what has been said in the preceding chapter that that fall is not adequately characterized by being called an unforeseen disaster or a catastrophe of the price structure wantonly wrought by monetary factors or the vicious spiral—debt deflation, in particular—and the like. No doubt these and other elements contributed to the violence and, in many individual cases of raw materials and semifinished products, to the extent of the drop from, say, the middle of 1931 on, when wholesale prices had fallen by about 22 per cent of the 1929 average. But it has been shown that a price level markedly below that of 1913 was what would certainly have prevailed without the war and what, even with the war, was bound to emerge in time as a result of the evolutionary mechanism and as a consequence of and adaptation to the industrial revolution of the age.[1] The reader will think as he pleases about the desirability or otherwise of letting this process have its way. But he should not overlook—however he may appraise—its economic function and its potential long-run results.[2]

Third, it has often been pointed out how differently different groups of commodities were affected and how rigorously the price system was changed thereby. The difference between the behavior of prices of raw materials and the behavior of prices of manufactured products has attracted particular attention and been held to have not only reflected but also intensified the growing disequilibrium. All this is true to some extent, but it does not tell the whole story either as to facts or as to inference. The minimum of the B.L.S. index of wholesale prices (February 1933) was 62 per cent of its value for July 1929. The National Bureau's index of physical volume of total production[3] gives for the minimum *year*

[1] It should, however, be recalled that the fall in the wholesale price index from the beginning of 1930 to the middle of 1932 was much sharper than the fall from the beginning of 1873 to the middle of 1875, which was part of an almost steady decline that (not to count the drop from the Civil War peak) lasted almost uninterruptedly from 1866 to the middle of 1879.

[2] No one who is not a socialist can, of course, wholly approve of these results. For one of them would have consisted in large strata of independent or semi-independent agrarian, commercial, and industrial business being weeded out, hence in a long step toward socialism. But this does not matter here.

[3] See Professor Mills, *National Bureau of Economic Research Bulletin*, Feb. 20, 1933, description of the index on p. 6. On prices see the *Bulletin* for Oct. 31, 1933.

almost exactly 62 per cent of the annual figure for 1929. But one component, construction, contracted to 31.5 per cent, while the index of building material prices was still 75.9 per cent, and the hourly wage rate about 80 per cent of their 1929 values at the trough in February. Here we have an obvious case of maladjustment. On the other hand, agricultural raw products show no influence of the depression on output for 1931 and at most a small one for 1932: "the farmer accepts the cut" both because he works under conditions of competition and because of the technological peculiarities of his production. The opposite reasons do not, however, wholly explain the fact that output of mineral raw materials contracted a little more than total output; for there were, in addition, elements of prime costs which failed to fall correspondingly, especially wages.[1] These elements—selling charges among them—acquire, of course, increasing importance for manufacturing industry as we proceed toward the finished article of consumption, and there is, hence, little to be surprised at in the February figure of the price index for processed nonfood consumers' goods (73.2 per cent of that of July 29). But many manufacturing industries also "took the cut," for instance, petroleum refining, food, tobacco, and leather product industries, paper and printing, clothing, and house furnishing.[2] Equipment industries did so to a much lesser extent or not at all. But precisely in their case, reduction of prices would hardly have stimulated demand.

These observations are in keeping with the view previously arrived at on the subject of price rigidities. They are also relevant to the question of the nature and consequences of the disruption by the depressive process of the preexisting structure of (relative) prices. Our model does lead us to expect dispersions—because of rigidities as well as for other reasons —which spell disequilibrium. But it does not follow that every change wrought by depression in the price system necessarily falls into that category or that return to equilibrium necessarily requires the reconstruction of the preceding system of relative prices. The contrary may well be the case—an example is the price of copper, which the opening of new sources of supply had turned into an untenable maladjustment that would simply be conserved by uncritical attempts to restore either price or income parities. Nor does it follow that every change in the price system which does fall into that category necessarily impedes recovery. It may facilitate it or be harmless. An example of the first possibility is

[1] The farmer "accepts cuts" in two different roles: first, as a producer and, second, as a laborer.

[2] In a not unimportant number of cases actual price reductions were much greater than would appear from indices based upon list prices. In a still more important number of cases comparison between the fall in the prices of agricultural and the fall in the prices of industrial products is rendered meaningless by the changes in the quality of the latter, for which it would be necessary to correct.

afforded by any panicky and temporary drop in foreign-produced raw materials; an example of the second, by the short-term rigidity of prices of equipment goods, for recovery does not typically start from expansion of real investment. Many particulars were, however, different in Germany. We will merely mention that agrarian prices did not fall anything like as much as in this country. In December 1932 they were about 65 per cent of the 1929 average, keeping about in step with the total index and practically avoiding the catastrophic slide of the American prices in 1931.

Adjusted demand deposits of reporting member banks in reserve cities outside New York, after keeping up to almost the middle of 1931 fell sharply to May 1932, after which there was a small increase that was just about wiped out in the first quarter of 1933. "Country banks" taken separately displayed but a decreased rate of decrease in the second half of 1932. Net demand deposits of reporting member banks outside New York City fell after the middle of 1931, first at an increasing then at a decreasing rate, the curve flattening out and then slightly rising in 1932. This is not exactly what we should expect but is accounted for by the changes in the investment item, which increased strongly through 1930 and the first third of 1931, then fell to the beginning of 1932 and increased again to almost the end of the year, while All Other Loans fell strongly and almost continuously throughout and beyond. The index of rate of turnover of demand deposits in principal cities, which we owe to the Federal Reserve Bank of New York[1] declined at a decreasing rate near the end of 1932, when it began to rise again.

National Income produced, evaluated at 1929 prices, fell from 1930 to 1931 by a larger amount than it had fallen from 1929 to 1930, and from 1931 to 1932, the minimum, by a larger amount than from 1930 to 1931.[2] Net corporate income (All Corporations except tax-exempt ones and life insurance companies; before payment of income tax) became negative to the amount of 2,850 millions in 1931, and for 1932 displays the maximum loss of 5,200 millions. The number of corporations reporting loss was greater than the number reporting positive revenue as early as 1930; in 1931 the relation was 284:176; in 1932 it was 366:80. Still more significant are the figures of corporate accumulation, though the limited value of such accounting items must again be borne in mind. Already in 1930 it was negative to the amount of 4,110 millions. It was minus 6,040 millions in 1931, minus 6,550 millions in 1932, and minus 3,060 millions for 1933.[3] "Business Savings" as measured by the Depart-

[1] See its *Monthly Review* for June 1, 1935.

[2] See S. Kuznets, National Income, 1919–1935, 193, p. 8, Table I, col. 4.

[3] See S. Fabricant, Measures of Capital Consumption, *National Bureau of Economic Research Bulletin* for June 30, 1936, and *Statistics of Income.*

ment of Commerce (National Income, 1929–1936, 1937) were minus 4,903 millions in 1930, minus 8,052 millions in 1931, minus 8,942 millions in 1932, and only in 1935 reached a modest positive value for which year Professor Kuznets' "net savings of enterprises" are still at minus 3,252 millions.[1] The fact that the minima mostly (not for national income measured in current dollars, however,) occur for 1932 is valueless for us, because there can be little doubt that government action in 1933 is responsible for that.[2] Otherwise those data are, whatever their shortcomings, full of interest for us.

For the moment the situation that faced the incoming administration certainly was, and for the future it looked, untenable. The unpopular necessity of refinancing corporate business becomes particularly obvious if, accepting again the National Bureau's method of correcting corporate accumulation by subtracting the difference between depreciation on a cost basis and depreciation on the basis of current prices—which still leaves out of account inadequate provision for obsolescence—we realize that the sum total of those accumulations for the period from 1919 to 1933 turns out to be minus 7,110 millions.[3] This does not mean that the sum total of cash items fell spectacularly. On the contrary, cash was precisely the item that actually shrank least as compared with 1929—from about 7.5 to about 6.1 billions in 1932—although omission of current revaluation formally also kept up others; needless to repeat that this phenomenon was wholly consequential and merely reflected but did not cause the spiral. Nor does that mean that dividends fell as much as earnings which (net income as percentage of capitalization) were minus 0.6 per cent in 1931 and minus 2.8 in 1932,[4] only utilities, foods, beverages, tobacco products, chemical and allied products, and (substantially) printing and publishing, staying on the positive side throughout.[5] Not

[1] Professor Kuznets, *op. cit.*, Appendix B, discusses these differences, the numerically most important causes of which are the governmental dissavings and the adjustments for changes in the valuation of inventories included in his estimate but not in that of the Department of Commerce. In his series of net capital formation in business at 1929 prices (*op. cit.*, Table 13, p. 48, row II 1 *b*), which we have used already, negative values begin in 1931 with 458 millions. 1932 displays the minimum of minus 2,600 millions and the figure for 1935 is still negative.

[2] That statement will, however, have to be qualified later on.

[3] S. Fabricant, *op. cit.*, p. 12. As has been pointed out in the preceding chapter, nothing follows from that except the necessity for the individual firm to make accumulations which may over time prove not to be accumulations at all. We could, for example, not argue that it disproves any oversaving theory. On the contrary, the fact itself could equally be invoked in verification of the theory that individual attempts to accumulate will precisely result in the dissipation of still greater amounts (Ezekiel, Keynes).

[4] Since net income includes other elements besides profits within our meaning of the term, the latter were negative to an unknown but obviously very much larger percentage.

[5] National averages hide many details which would shed light on our process. Thus

only stockholders in many corporations but, if considered as a class, *all* stockholders were to a considerable extent allowed to live on their capital. Thus already for 1930 negative accumulation ensued from the payment of a total of net cash dividends amounting to nearly 5.7 billions, while all the net income that remained after tax payments was less than 1.3. And in 1931 4.2 billions of dividends compare with a net deficit plus taxes of over 3.2. While we shall think about the long-run effect of this according to the theory of accumulation or saving that we make our own, we cannot differ about the remedial or contraspiral effects such a behavior must have had in the short run—however much they may have been overcompensated by other factors—particularly since it preceded the setting in of deep depression. Flotations of new securities accord with those contours. Corporate issues, foreign included, were still 1,736 millions in 1931 but only 325 millions in 1932, while municipal borrowing was active and the Federal government borrowed over 3 billions net.

Industrial pay rolls fell, of course, more strongly than employment and arrived, in the middle of 1932, at about 40 per cent of the 1923 to 1925 averages. Per cent fall, less steep in 1931 than it had been in 1930, then came to a halt. After declining substantially from the middle of June to the middle of July, practically in all manufacturing industries and many others (the main exception being the woolen-goods industry), aggregate factory wage payments increased though subseasonally in August and more significantly in September and October, after which they dipped again to a new low point in February–March 1933. We interpret as in the case of debits. The German development was similar: the sum total of wages and salaries exclusive of pensions but inclusive of salaries of public employees had, according to the estimate of the Institut für Konjunkturforschung, fallen from its maximum of about 44.5 billion marks in 1929 to about 41 billions in 1930, and continued to fall to 33.5 billions in 1931 and 25.9 billions, the minimum, in 1932. No fall occurred within the latter year, and the figure for 1933 is slightly higher, but lower for the first half as compared with the first half of 1932. In both countries, therefore, real wage bill (pay roll by cost-of-living index) fell considerably. Average per capita weekly earnings in the United States, as per monthly data of the Bureau of Labor Statistics, declined from 1929 to 1932 by about one-third in manufacturing, only insignificantly with public utilities and only by 12.5 per cent in retail and

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the textile industry earned minus 6 per cent as early as 1930, minus 6.4 in 1931, minus 8 in 1933, which places it near the head of the list of losers. But if New England be excluded, its place shifts to about the average. We see here with particular clearness the connection of depression with the competing-down process.

wholesale trade.[1] The fall came about at a percentage rate that increased to 1932 and continued in 1933 but at a decreasing rate, the total reduction in the end amounting to about 36 per cent in money and about 16 per cent in real terms.

Hourly rates fell, to the middle of 1933, but very much less—in some industries, such as anthracite coal mining, not at all. In manufacturing they declined from 59 cents in 1929 to 50 in 1932 and 49 in 1933.[2] This would yield a gain in real terms, and so would to a lesser extent the course of money wages of unskilled labor as recorded by the Bureau of Public Roads. But no estimate which aims at a single figure of nation-wide significance can possibly yield a *fall* in real rates. In Germany, available quotations of hourly rates being official "tariff" figures, statistics may somewhat understate the fall in money wages. But they were, at the end of 1932, at about 78 per cent of the average of the maximum year 1930, which would make a decline almost exactly equal to that in the cost-of-living index. Now two things are obvious from this behavior of hourly rates. First, they cannot have been a factor in starting the depression, whatever the theory we may entertain on the subject: their fall cannot, because they kept up well at first and only reacted to a depression already in full swing; their previous rise cannot, because as we have seen before, it was altogether inadequate to produce that result. Second, if there is anything at all in the view which has been discussed in the preceding chapter, *viz.*, that the long-run level of American money wage rates, as distinguished from their cyclical variations, was "too high" in the sense that it was partly responsible for the unemployment of the twenties, then it is clear that the fall which occurred during the depression was inadequate to correct that level, although the latter might have been corrected by a subsequent rise in prices occurring without an increase in wage rates.

But it is more difficult to say whether wage rates, by behaving as they did, intensified or alleviated the depression. Since the dominating factor in the short-run situations, especially of "deep" depression, is the downward shift of individual firms' "demand curves" for labor, and since many of them no doubt become less elastic in the process of shifting downward, it is not only likely that actual reductions failed, for the time being, to call forth additional demand for labor sufficient to raise the total wage bill above what it otherwise would have been, and that greater reductions would have still more completely failed to do so, but there

[1] Even the figure for manufacturing is but an average with a very considerable dispersion, a fact which must be taken into account in judging effect. The figures for other industrial groups vary widely from that and between each other—the one for bituminous coal is 45 per cent.

[2] Data of the National Conference Board.

must also have been cases[1] in which reductions of rates simply resulted in a decrease of total output and employment.

It will be seen, however, that this argument progressively loses force as the system approaches the recovery point and that beyond it the opposite conclusion suggests itself. Then our question admits of a much more definite answer. We still have the same classes of cases before us. But their relative importance changes when "demand curves" for labor tend to shift upward and to become more elastic. Resumption or expansion of operations begins, as we know, in individual spots. It certainly did so begin in the case before us, so that the effect on prime costs of individual firms is all that has to be taken into account. Firms try to resume or to expand operations in a situation which, while no longer discouraging, yet does not offer those enticements—profits in our sense or any of those gains which are induced by the emergence of profits—that later in the cycle may make moderate variations of wage rates a matter of indifference. They are likely to calculate closely. Even in the short run they have, particularly if starting afresh after a shutdown, some latitude as to the combination of factors that they are going to adopt. The prevailing cheapness of money will give them a slant toward mechanization, which may be intensified by an increase and counteracted by the previous decrease in wage rates. Hence pay rolls are likely to increase faster in the absence than in the presence of an increase in wage rates, as long as there is abnormal unemployment. Thus it seems permissible to infer, not only that such fall in rates as occurred facilitated inception of recovery, but also that a stronger fall would, at least in the American case, have facilitated it still more.[2]

D. The United Kingdom, 1931–1938.—In the preceding section English developments were allowed, first partly and then completely, to drop out of our picture because justice could not have been done within it to certain features peculiar to them. We now turn to a discussion of the few points that are relevant to our subject, and will at once carry our survey as near the present time as possible. Throughout, it must be kept in mind that England suffered from the repercussion of practically everything that went wrong anywhere in the world and that she was a chief sufferer from the general "incapsulation" incident to the world crisis, though she was also the chief beneficiary of the fall in the prices of raw materials. She reacted to all that by abandoning the policy of the

[1] Various possibilities of this type have been pointed out by Mr. Harrod in his review of Professor Pigou's Theory of Unemployment, *Economic Journal*, March 1934, p. 28.

[2] There is no paradox in holding that a given event may intensify depression and, after depression, facilitate recovery. Nor should there be any difficulty in disposing of the question that is likely to arise if the above be read by itself, *viz.*, how "demand curves" are to start shifting upward if "incomes" be kept down.

Gold Standard Act, by tightening the economic bonds between herself and the Empire (and some other countries) and, last but not least, by speeding up that shift of her resources toward production for the home market, of which the most important result, as well as symptom, was the Building Boom.

1. The event that made England drop out of the line followed by our narrative—or would, at all events, have caused the reader to think that she did—was the suspension of gold payments by the Bank on Sept. 20, 1931, sanctioned the next day by the Gold Standard Suspension Act. The world depression had merely made it more evident than it had been before, that, under the social and economic conditions prevailing at home and abroad, the maladjustment caused by the return to the prewar gold parit would not disappear of itself and that, those conditions being what they were, there was little if anything to be gained by fighting for that parity, while at the same time the sacrifices and internal struggles this would entail showed in their true dimensions. This being so, it is *ex post* easy to understand that abandonment of the gold standard was really a foregone conclusion when the state of the Bank's stock of gold came in to play the role of Peel's potato disease.[1] It had been well maintained, thanks to exceptionally favorable circumstances into which we need not enter,[2] during most of 1930 and in fact replenished after September 1929. But in November 1930 the efflux set in which was to prove decisive. Government and Bank acted in a way which easily lends itself to hostile comment both from advocates and from opponents of abandonment, but which, whatever the actual intentions may have been, was "objectively" eminently wise. In order to take the plunge, and to reverse the policy of the Gold Standard Act, with an unbroken front and

[1] The analogy goes pretty far. The Irish potato plague and the distress caused by it may have impressed the Duke of Wellington and other members of the Peel cabinet; but its effects were not remedied by the repeal of the import duties on cereals but by direct relief—the "Queen's pay"—which would have been no less possible had protection to agriculture been retained. Similarly, the loss of gold did not absolutely force the hands of the government or the Bank. But it provided an argument that facilitated the difficult tasks of transition. The writer has never been able to understand why some Englishmen should resent this suggestion and insist on England's having been forced off gold by dire and ineluctable necessities. Social and economic data, in England and the world at large, being what they were, going off gold was an economically rational thing to do. There is no offense in stating this, as far as the writer can see, and further than this he does not go. The author who wrote a book about the "tragedy" of the pound must have a concept of that literary genus entirely different from the present writer's. The ability of so shaping events that every action seems to arise out of objective necessity and to embody the only possible course to take, makes the unique greatness of English statesmanship.

[2] Among them were gold imports from countries the currencies of which were *in extremis* and which had to part with their gold, such as Japan and Argentina. Within the Empire, Australia was in the same situation.

to disarm domestic criticism—of which, in fact, there was very little and none that counted politically[1]—it was first necessary to do for the pound all that anybody could ask without being voted unreasonable by public opinion. So the Bank borrowed 50 million pounds in this country and France (Aug. 7, 1931) and the Treasury announced a similar transaction in the amount of 80 million pounds on Aug. 28.[2] The Bank, moreover, in July had already raised its rate in two steps from 2.5 to 4.5 per cent, and before that, in January 1931, had begun to reduce the governments held by the banking department.

This raises the questions, very natural from the standpoint of defenders of "orthodox" views on currency and banking, why both measures were not taken earlier—those defenders would say "in time"—and why, in particular, the Bank stayed at 2.5 per cent from May 14 to July 23, *i.e.*, during the really critical time. The rates of the New York Federal Reserve Bank (1.5 per cent) and of the Bank of France (2 per cent) give at best a partial answer. More important is the consideration that only a very modest effect could have been expected in the existing situation. But since *some* impression could no doubt have been made on gold movements by vigorous handling of the tools of central bank policy, another conclusion imposes itself: while perfectly ready to undergo sacrifices such as are incident to borrowing, the Bank was not then ready, for the sake of the pound, to exert significant pressure on the domestic organism. The timing and dosing of the open-market operations mentioned, which absorbed only funds that would have been idle in any case,[3] is conclusive on this point. Technically, however, the pound, unlike the dollar, was "pushed off gold" and "went down fighting." And the sensation all over the world—Continental bankers and economists could not have been more completely stunned by the news that Providence had defaulted on its bonds—was all the greater.

But in England there was neither panic nor—precisely owing to the way in which the thing had been done or, if the reader prefer, had come about—loss of "confidence," but rather a sigh of relief. However, everything was done to keep up discipline and to prove *urbi et orbi* that

[1] There were, no doubt, many individuals who, regardless of economic interests and effects, sincerely grieved over what to them seemed a lowering of the flag. The word *ignominious* actually found its way into the pages of the *Economic Journal* and in private conversation it may have been said that "the Bank of England went bust." But these feelings did not amount to anything. It might have been different if the Labor party had been still in power. This was, however, avoided by admirable statesmanship on the one side and no less admirable discipline and patriotism on the other: no party question arose.

[2] Both credits were very promptly repaid—by the Bank on Oct. 31, 1931, and Feb. 1, 1932; by the Treasury on Mar. 4, Mar. 29 and Apr. 5, 1932.

[3] This particular point, we have the satisfaction to state, is recognized by Mr. Hawtrey, *op. cit.*, p. 33.

this was not to be the beginning of loose finance and that there was no warrant whatever for wicked Continentals to talk about South American analogies. Bank rate was put up to 6 per cent on the day of suspension and actually dwelt on that vertiginous peak for about 5 months—it was first reduced to 5 per cent on Feb. 18, 1932, but 3 per cent was not reached until Apr. 21; on June 30, 2 per cent came, to stay to the time of writing—dealings in foreign exchange were temporarily (till Mar. 2, 1932) subjected to restriction,[1] a temporary embargo on capital issues (relaxed Aug. 30, 1932) was declared and, most important of all, the orthodox principles of public finance were upheld by truly heroic efforts—an economy bill among them, which was passed by the Commons eight days after the suspension act—which availed to end the financial year 1931–1932 with a surplus of 32.9 million pounds.[2]

From our standpoint it is necessary to notice that this policy, however admirable some of us may think it was, exerted *some* pressure on the economic process and, for the time being, tended to neutralize such stimulating effects as the depreciation of the pound might have had. This statement implies the admission that depressing effects may in particular have emanated from the 6 per cent bank rate. Personally, the writer doubts whether a single additional pair of boots would, during those 5 months, have been produced had, other things being equal, bank rate been lower. Still, since the rate might easily, *i.e.*, without producing per se any very catastrophic consequences, have been 3 per cent instead of 6, and since it is no part of our theory of central banking to hold that a difference as considerable as this is a matter of no importance to producers' business, we will for argument's sake concede that its pressure did extend beyond the open market, provided that the reader, in exchange, be good enough, first, to observe on any of the familiar graphs that busi-

[1] Those restrictions were, in April 1932, replaced by the establishment of the Exchange Equalisation Account—misleadingly called a Fund—which serves the same purpose more effectively and other purposes besides. Even from the standpoint of our subject, this original gadget would deserve more attention than we can afford to bestow. It must suffice to note that its operation may powerfully intensify or offset the open-market operations of the Bank and be quite as effective in regulating the money market as these, though much more difficult to observe. If the Fund simply bought and sold gold and foreign currencies, the effect on member banks' cash and reserve with the Bank would be much the same as the effect of gold movements; the only difference would, in this case, consist in that the Fund's operations are planned. This effect, however, may be counteracted by concomitant sales and purchases of treasury bills; but again, it may not. If the Fund sells, say, dollars and deposits the proceeds with the Bank without relieving member banks of a corresponding amount of treasury bills, a restrictive influence would be exerted. Hence, we have here a new organ of central banking, which would be very important for us if we could go into details.

[2] The official result was a surplus of only 0.4 millions. But "expenditure" contains an item of 32.5 millions for sinking-fund purposes.

ness was not more depressed during those 5 months than we should have expected it to be in any case—the quarterly index of production of the London and Cambridge Service first rose and then stayed up during those critical months—and, second, to admit that if there was any aftereffect later in 1932 it cannot have been very terrible, since by August the building boom had set in. However, together with all other measures taken—in particular, the balancing of the budget—this policy no doubt substantially contributed to all those features of the English process that make so striking a contrast with the course of events in the United States: a speculative flare-up and the consequent relapse were prevented, expansion was patiently awaited, secure foundations were laid for the sustained and sober advance that was to last with practically no interruption until the spring of 1938.

2. To complete this part of our sketch, as soon as it felt safe ground under its feet, the Bank made a move toward monetary expansion, and along with reducing its rate from 6 to 2 per cent, bought government securities.[1] The immediate object was preparation for the great refunding and conversion operations of that year.[2] But the ultimate effect was to end the period of easy money at high rates—no reason to object to this as a paradox—and to usher in the period of easy money at low rates. Day-to-day money, for instance, which in the average of 1929 had been at 4.57, fell to 0.68 for the third quarter of 1932, then was 0.66 per cent in the average of 1933, 0.81 per cent in the average of 1934, 0.73 per cent in the average of 1935, and from April of that year stayed put at 0.75 per cent to the time of writing—the manometer of interest was paralyzed almost as effectively as in the United States.

Those open-market operations, however, kept within sober bounds. The annual average of government securities held in both departments of the Bank, which in 1930 and 1931 had been about 295 million pounds, was only 312 for 1932 and 335 in 1933. But this and the influx of gold helped to swell the cash reserves of member banks (London clearing

[1] In doing so, it not only offset, but during 1932 occasionally more than offset, losses of gold. See on this and cognate subjects, S. E. Harris, British and American Exchange Policies, I, The British Experience, *Quarterly Journal of Economics* for May 1934.

[2] It must again be borne in mind that the money market and the banking policy were, all along, dominated by the requirements and actions of the Treasury and by the mechanics of public finance. Release of government loan dividends, provision for application money for government issues, income tax payments, treasury preparations for heavy payments, and operations to facilitate all this or to offset the effects of it all were so important that a history of the English money market during those years could almost be written in terms of them. This is another important subject that must be dismissed in a note. That open-market operation and the conversion of 2,086 million pounds of 5 per cent war loans to 3.5 per cent (announced June 30, 1932) were, of course, necessary in order to remove an obstacle on the road to cheap money.

banks, average in 1931, 182 millions; 1933, 212) and their investments (London clearing banks, annual average of 1931, 301 millions; of 1932, 348; of 1933, 537; of 1934, 560; of 1935, 615; no increase in 1936;[1] small increase in 1937; decrease in the first quarter of 1938).

This increase in investments is, of course, reflected in deposits, especially in their great stride in 1932–1933, which, however, did not fail to be accompanied by a symptom of the truth that banks' investments tend to produce idle deposits; for the ratio of current accounts to total deposits, which was about 54 in 1929 and then naturally fell—we remember that there was no fall in total deposits in 1930; the fall in 1931 was insignificant, all the loss of gold notwithstanding, which shows again that also in this case monetary stringency cannot have been a major element in the depressive processes—reached its minimum (50) for 1932 and stayed near its minimum in 1933 (a little over 51).[2] Total deposits in the nine clearing banks were above the 1929 figure already in 1932—the further fall in current accounts that occurred in that year being more than compensated by an increase in deposit (time) accounts—and, 1,914 millions in the average of 1933. The slight setback in business that occurred in 1934 is reflected, in spite of continued increase (over the year) of investments, in a small reduction, but the average for 1936 was 1,961—200 millions above 1929—the average for 1936 over 2,100 and that for 1937 still higher. No shrinkage but, on the contrary, further increase occurred in 1938 (to September).

To the last quarter of 1935, advances contributed next to nothing to this expansion of deposits. We have here the same phenomenon that will have to be mentioned in the American and the German case—a similar structural change in bank assets. Advances shrank sharply in 1932 and kept creeping along at about the same level for over two years afterward. But they increased significantly—as they should within the rhythm of our schema—from the fourth quarter of 1935 to the first quarter of 1938, and for part of this period dominated variations in deposits. The same is true of that part of discounts which consists of commercial bills, if we may judge from the returns of the three banks that publish these figures separately. Otherwise, the bulk of the portfolios consisting of treasury bills, the discount item is not of much help to us.

3. Those effects of monetary management as practiced in England which do *not* work via international relations may, therefore, be summed up by stating—what will presently be verified by time-series evidence—that it brought out rather than obliterated the features of the economic

[1] This is the "trace" left of the "normal" movement of member bank investments in the cycle, since 1936 may be considered as part of a Juglar prosperity.

[2] In 1935 it climbed up to what was nearly the 1929 figure—another trace of the cyclical regularity.

process which we should have expected to observe in the "normal" course of things. Availing itself of the freedom gained by the disruption of the galling gold ligamen, it no doubt protected that process from what would otherwise have happened to it and avoided the painful operations which, without going off gold, would have been necessary. But it neither aimed at nor effected anything that could in any useful sense be called an "inflationary" impulse, which in fact is not *necessarily* inherent in either devaluation or depreciation. It (and concomitant policies) not only did not aim at but, if anything, *discouraged income generating public expenditure* and increase in rates of earnings or commodity prices. Thus it was more remarkable and successful by what it refrained from doing than by what it did. The effects which worked through international relations must be viewed in their place within a comprehensive policy of reorientation.

a. The relief immediately given to foreign trade and conserved by the stability of money wage rates and domestic prices is likely to be underestimated[1] because it mainly consisted in warding off much of that additional shrinkage which would otherwise have ensued, at least during 1932. There was, hence, no good reason for the disappointment expressed at the apparent absence of any considerable immediate effects. Also, the relief was in part counteracted by measures taken in other countries, both in retaliation to and independently of the English move.[2] As far as these reactions did not consist in tightening quota and so on but in sympathetic depreciation of currencies, it must, however, be emphasized that they did not entirely defeat the English purpose even in the sphere of international trade. For wherever the gold ligamen galled, its removal would have helped English trade by improving the general situation in the respective countries,[3] and its removal *coupled with that spending policy from which England substantially refrained,* would even have given England a relative advantage in addition to the absolute one. Because

[1] Methods are available for arriving at a rough estimate of that effect. For our purpose it is, however, not necessary to enter into what would be a very laborious and expensive investigation.

[2] There really was a third category: without wishing to retaliate, foreign countries found it easier to abandon the gold standard and to revise their promises to their creditors because the procedure had been made respectable by the English example and no longer carried the connotation it used to. The implications of this fact are most important for the general theory of morals. Japan, for instance, who went off on Dec. 14, 1931, had no doubt very good reasons for doing so. But, attaching much importance to her impeccable financial record, she would presumably have hesitated to take the step (though it might have become inevitable later on) without the precedent created three months earlier.

[3] It is, hence, not correct to say, as was said at the time, that England tried, by abandoning the gold standard, "to push the burden of depression on to other countries." Even the element of truth, however, which is contained in this phrase, should in fairness read that she tried to push back the burden that had first been pushed on to her.

of this and other reasons, it was perfectly logical to refuse to consider stabilization of the pound at any particular value, and the permanent refusal to do so would be an understandable policy.

Two other factors must, moreover, be taken into account. First, as has been stated before, the great fall in the value of exports of manufactures had occurred from the last quarter of 1929 to the beginning of 1931. During the latter year, the rate of shrinkage rapidly decreased throughout the three quarters preceding suspension; and in spite of depreciation, the monthly average for 1932 was still lower, though no doubt higher than it would have been without it. The average for 1933 (23.4 millions) was very little higher and even the average for 1936 (28.4) was but 55 per cent of the average for 1924, or 59 per cent of the average for 1929. Only the first half of 1937 showed a vigorous upswing (seasonally corrected figure for June: 37 millions) which then gave way to relapse (June 1938: 30.7 millions, which was better, however, than the values for April and May). But this contour simply describes the course of (English and foreign) cyclical phases and is what on a somewhat lower level we should have expected to observe in any case. The conclusion which follows for the degree of influence exerted by suspension is obvious. Furthermore, part of the success attained must be attributed to adaptations to new conditions which would have asserted themselves, depreciation or no depreciation: while the immediate effects of depreciation, in 1931 and 1932, were particularly noticeable in the exports of textiles to the Far East—British exporters making promptly concessions in the foreign prices of their commodities[1]—the increase which occurred in 1934, for example, was only to 15 per cent due to textiles, which tended to drop into the background while other articles were coming to the fore. This adaptation or shift was no doubt facilitated or conditioned by the depreciation of the pound, but cannot be called simply its automatic consequence.

Second, suspension was accompanied by England's definitive conversion to neomercantilism. Her monetary policy is in fact, but the complement of it.

b. The Abnormal Importations Act (Nov. 30, 1931; three lists of emergency duties followed within the year) which marks the transition, presented itself as, and in a sense undoubtedly was, an emergency measure. It added to the effectiveness of depreciation in curtailing imports and in relieving, on balance, the immediate situation. The two measures combined account for the bulges in all wholesale price indices, as well as in the indices of prices of foods, nonfoods, and materials, which occur for the last quarter of 1931 and were eliminated or more than eliminated by the middle of 1932. But excepting some effects on specu-

[1] See Professor Harris *op. cit.*, p. 487.

lative anticipations, depreciation did not immediately affect domestic prices—or, for that matter, business activity—in any way other than by the prices and quantities of English foreign trade.

The frank adoption of the principle of (moderate) protection by the tariff act of 1932 acquires its historic importance and the glamour of vast possibilities in connection with the 11 bilateral agreements between the different parts of the Empire (passed by the House of Commons on Nov. 3, 1932) which gave effect to the understandings arrived at in Ottawa (July 21–Aug. 20, 1932) and crowned the efforts of more than thirty years. It does not follow, however, that the importance of these achievements is equally great for our subject and for the period under survey. In Chap. VI we have seen that the immediate effects on the cyclical process of the German Zollverein were by no means commensurate with what one might expect when judging from the long-run developments for which it in part provided the frame. The same is, *mutatis mutandis*, true of the case in hand and from our standpoint we can dispose of it by three remarks.

First, although the new policy affected total imports of manufactures considerably and still more many individual items, such as motorcars, neither depreciation nor protection prevented values of total net imports from recovering, in 1933 and 1934, fully as much as values of exports of United Kingdom produce or manufactures. They increased more than values of exports in 1935, 1936, and especially in the first half of 1937. This means that the new policy did not prevent them from behaving according to the cyclical schema.

Second, it is worth while to notice the contribution of depreciation to the Ottawa success. It is hardly conceivable that things would have been, comparatively speaking, so smooth if England had had to appear in the role of the adamant creditor instead of appearing, as she was able to do, in the role of the understanding friend who had just waived a substantial part of his rights. Moreover, depreciation and monetary management reestablished England's lending power, which the gold maladjustment and the crisis had all but destroyed, and thus made her again what she had been before, the giver of all financial delights.

This element we must bear in mind when judging the balance of advantages and disadvantages that accrued to England from the depreciation of her currency and from her methods of monetary management. Both had much to do with the relatively good showing, during the world crisis, of her income from foreign investments, which in turn mitigated the impact of the depression on her domestic process. For instance, the "income from British investments in Oversea Securities dealt in or known to the London market"[1] fell indeed from its 1929 figure of 212.4 millions

[1] See the articles on the subject by Sir R. M. Kindersley in the *Economic Journal*. The above figures are taken from the one in the number for December 1937, p. 654, Table IX.

to 138.3 millions in 1933 (minimum) and was only 164.4 even in 1936, but that part of it which came from loans to Dominions, Colonial and Foreign Governments and Municipalities kept up well during the crisis years, though it continued to fall later for other reasons, and even the total is much more comforting to look at than it would otherwise have been.

Third, the Ottawa policy did not stop at the frontiers of the Empire. The "sterling bloc" extended beyond and included several valuable conquests. Tariff reductions and quota facilities for English commodities were, for example, secured by treaties with the countries that had most promptly linked their currency to the pound—Denmark, Norway and Sweden—but much more than that resulted in the case of the convention with the Argentine Republic (signed May 1, 1933, supplement Sept. 26). In this case the remission of debt implied in the depreciation of the pound, coupled with an additional loan, was made the cornerstone for arrangements about the unfreezing of credits, commodity trade, and control of foreign exchange dealings and so on, in a way highly advantageous to Great Britain.[1] It may take some enthusiasm to style that arrangement as the granting of Dominion status to Argentina. But it is an outstanding example of the able and conscientious handling of individual sources of actual loss and potential gain which no doubt greatly relieved the domestic cyclical process.

4. As stated above, English industrial processes displayed, besides the general characteristics appropriate to the Kondratieff phase and the special features characteristic of the downgrade of *this* Kondratieff, also the effects of the reorientation of the English economy in response to the change that had occurred in England's international position. The first class of phenomena does not call for additional comment: electric power (more and more completely developing into state enterprise), electric manufacture (wire, cables, installation, lamps, apparatus, and machinery), motorcars, nonferrous metals, chemicals including rayon, aeroplanes, and so on continued to progress without much interruption even in the worst year, the British-owned rubber plantations being, within this class, the interest that suffered most during the crisis. For some of the chief sufferers from reorientation, such as the coal and iron industries, the situation was rendered still worse because the normal process of innovation[2] would have made them centers of depressive symptoms without that. This was not so, however, with textiles and shipbuilding, although the latter experienced a spectacular recovery in 1934 and again in 1936, lasting through 1937.

[1] *Cf.* R. B. Stewart, Anglo-Argentine Trade Agreements, *Canadian Journal of Economics and Political Science* for February 1936.

[2] The chief instance of a major industry that suffered only, but suffered severely, from the effects of economic "progress," is supplied by the railways.

In the second class of phenomena, the most important item, in fact the item that may with but little qualification be said to have "carried" recovery and prosperity was the building boom.[1] It was a boom in a consumers' goods industry, dwelling houses supplying from 1932 to 1934 over 70 per cent of the value of building plans approved, the share of factories not reaching 8.6 per cent until 1936. And though mainly, it was not only conditioned by that general shift toward production for home demand and, as an aid to or symptom of this tendency, by the impediments placed in the way of foreign investment or by the unpromising outlook for investment, either as to safety or as to rate of return, in most foreign countries. Fiscal policy, the lead given in the twenties by the policy of subsidies, the effect this subsidized housing had exerted on the development of an efficient large-scale building industry, the stable rates of earnings which in a time of falling cost of living left a large middle stratum that suffered comparatively little from unemployment with a margin to spend, the fall of building costs during "deep" depression, the subsequent cheap money policy, industrial migration—all this powerfully propelled either the demand for housing or the means of satisfying it and thus helped to condition the boom in unassisted building. Some of these favorable conditions were only temporary. Cost of living began to rise (after relapse from the rise in 1931–1932) in the spring of 1935 and then rose considerably to the summer of 1937. The index of building costs (1924 = 100) which had been at 124.2 for 1930 and at 107.5 for 1931 was again at 124.5 in 1932 and rose to 165.4 for 1933. The mortgage rate was slow in falling from its maximum in 1931. The first important reduction occurred toward the end of 1932, *i.e., after the boom had started*, and the effects of the further fall in 1933 together with the easing of other conditions were more than offset by the increase in building costs. The cheap money policy thus helped the building activity by shifting toward it funds that would have had to be content, from the middle of 1932, with less than 4 per cent elsewhere, and by thus increasing the power of the specialized machine for the financing of home building rather than by offering direct stimulation.

The activity in unassisted housebuilding as measured by the number of houses completed without state assistance (Ministry of Health; the figures are not quite complete; years are from Oct. 1 to Sept. 30) got into its stride in 1930, the year after discontinuation of building under the Chamberlain Act, 110,375 houses being completed as compared with 71,083 in 1929. The figure for 1931—the year of unprecedented and

[1] See *ante*, Chap. XIV, Sec. D, 2. On the facts and the theory of the boom, *cf.* a forthcoming book by Mr. W. Stolper; for the rise and policy of the Building Societies in particular the article by Sir H. Bellman in *Economic Journal* for March 1933. Total resources of building societies eventually rose to over 700 million pounds.

unbearable catastrophes[1]—is 132,909 and that for 1932, the worst year in our period, 132,886. Then follows an ascent at increasing rates to 1935 (283,453). But although declining, home building has kept going strong to the time of writing. Even in the first quarter of 1938 the figure of value of housebuilding plans approved was exactly the same as that for the first quarter of 1937, the decline in total value of building plans approved being exclusively chargeable to industrial construction, and the figure for the second quarter of 1938 was but 7 per cent below that for the second quarter of 1937. This boom is perfectly regular in the sense of our schema. Its natural end will make a not less regular contribution to what within that schema should be the depression phase of the current Juglar.

Here we may notice the role in the cyclical process of actual and prospective expenditure on armaments, which began to assert itself at just about the time when the building boom had passed its peak: though such expenditure is the almost unavoidable concomitant of neomercantilist policy, it was the Abyssinian incident that caused it to step out of the frame of the current budget and to become a new factor of the economic situation. It means, on the one hand, the building up of a new industrial structure for an armament *industry* of, at all events, new proportions, which is the primary desideratum.[2] Whether left to private or effected by public enterprise, we have here a "conditioning" task which may be perfectly adequate for carrying a Juglar prosperity, even if we discount fantastic figures inspired by passing panics. On the other hand, this means a break in the government's financial policy, of which the abstention from anything like American spending—from income generation by public spending—was one of the major elements until them. What has, for reasons which the writer believes were justified by results, been denied to public works is now perforce granted to armaments. Effects may some day dominate the picture to the complete extinction of cyclical contours, but so far this is not the case. For the

[1] It is true that a boom in some small industry may start in deep depression, owing to circumstances peculiar to that industry, without affecting the general picture, which may continue to be one of deep depression. This is not possible in the case of a boom in dwelling-house building, which presupposes conditions of demand, and entails effects on general business, incompatible with deep depression. To speak of deep depression or of unrelieved gloom amidst the beginnings of such a boom is an abuse of terms.

[2] The English armament industry was always considerable, from the seventeenth century on; but its size was a function of foreign rather than domestic demand. The development during the World War was to a considerable extent undone during the subsequent 15 years. Exports of arms (including torpedoes and the like), ammunition, and warships amounted in 1934 to only about 3.36 million pounds, and this figure characterizes the size of the armament industry fairly well. There was, of course, a quickly expanding aviation industry in addition.

fiscal year 1937–1938 the socalled special rearmament expenditure financed by loans—which is additional to the Defense item of the ordinary budget—was only 65 million pounds, and it would take much more than that to induce what is euphemistically referred to as "expansion," especially as long as vigorous taxation and economy—21 millions were in the same year economized on Civil Expenditures—are adhered to. Some steadying effects on employment in recessions and depressions and some pressure on the standard of life are all that can be immediately expected.[1]

Budgetary deficits, if any, continued to be insignificant. So was the increase in the National Debt, if we exclude that part of it which was incurred in order to finance the gold purchases of the Exchange Equalisation Account. But it would be forcing open doors if we tried to prove that no government "inflation" lent its aid to the steady progress of those years.

5. Evidence from time series confirms the impression we have gathered so far: neither new policies nor the numerous disturbances to which England's economy was exposed, effaced the cyclical contour lines which, taking account of specifically English conditions, we should expect from our schema.

Whether we take the Board of Trade's index of production or that of the London and Cambridge Economic Service, we cannot fail to be struck by the gentleness of the descent into, and the steadiness of the recovery from, the depression, which characteristically distinguishes the English curve from any other, the Nordic countries which followed the same monetary policy not excluded.[2] This steadiness is as much in evidence before as it is after the abandonment of the gold standard.[3] Between the middle of 1931 and the middle of 1932 there is a little hump which is not absent but much less marked in some countries that remained on the gold standard, so that it may, partly at least, be attributed to depreciation. The minimum, which occurs in 1932, is lower, however—the London and Cambridge Service quarterly index has 77.8 (average of 1924 = 100) for the third quarter—and the recovery of the fourth quarter then strongly continued in 1933, *without any appreciable rise in prices*, leading

[1] The above paragraph was written in the late summer of 1938.

[2] See *e.g.*, Chart I on p. 256 of D. Westcott's article, previously quoted, in the *Review of Economic Statistics* for December 1934.

[3] That gentleness of sweep—in some cases approaching, until 1933, a horizontal—is also observable in the majority of components, especially in Foods and Drinks, Leather and Boots, and from the middle of 1930 on, in chemicals, textiles, non-ferrous metals. Engineering including Shipbuilding and Mining displays a stronger downward slope to middle of 1932, and Steel is the most cyclical series of all. The steady upswing in the latter from middle of 1932 clearly falls into two segments, one covering 1933, 1934 and half of 1935, the rest covering the second half of 1935, 1936 and three quarters of 1937.

up to 102.5 for the first quarter of 1934. The general improvement of things which is observable in that quarter was associated with a temporary reduction of the income tax. In any case, however, and whatever the shortcomings of indices may be, we have before us a broad bottom extending over 1931 and 1932 which in time and shape exactly corresponds to the idea we have about how the depression of a Juglar located as this was should look, followed by a perfectly normal recovery phase which it would be highly unreasonable to attribute to monetary policy as "the" cause though, as we expressed it above, this monetary policy undoubtedly "protected" it from the consequences that adherence to the gold standard would have had. It is also perfectly *en règle* that recovery tapered off in the course of 1934, and so is the vigorous upswing in the last quarter of 1935, which, had we a desire to press the point, could be identified as the rise of the fifth Juglar.

The statement that recovery was perfectly normal would, however, require qualification if we accept the testimony of the London and Cambridge Service's quarterly index; for its figures for 1934, though higher than those of 1924, are lower than those of any of the years from 1927 to 1929 and thus fall below expectation. But we know that this is due to the inadequate coverage of that index. The annual index of the Service gives 120 for 1934 and 126.3 for 1935, which is substantially above the previous maximum of the postwar period (1929: 115.8). The completion of the preliminary reports of the 1935 census of production supplies us with confirmatory evidence. Data that may be said to present the balance sheet of the great depression have been analyzed by the Service and warrant the conclusion "that physical output in 1935 was about 20 per cent greater than in 1930.[1] Output per operative employed in All Industries increased still more,[2] engineering heading the list—then follow nonferrous metals, textiles, paper, and building—which suggests the presence of quite as strong a technological component as we should expect to find at that cyclical juncture.

Related to this technological component is the fact that part of the innovations the consequences of which worked themselves out during the period, *i.e.*, those connected with the general reorientation of the English economy, involved change of location and, hence, migration. This alone would account for an amount of unemployment supernormal even for that phase of the Kondratieff.[3] Moreover, the general factors

[1] *Special Memo.* 47, A. L. Bowley, J. L. Schwartz, and E. G. Rhodes, Output, Employment and Wages in the United Kingdom, 1924, 1930, 1935, p. 27.

[2] *Ibid.*, p. 35.

[3] The slightest unfavorable variation in employment is by a sector of the daily and weekly press hailed as proof positive of the failing of capitalism and used for derogatory comparison with forms of organization of the bolshevist and fascist type—fascism being,

which made for supernormal unemployment in the postwar period and which we will not list again, must be borne in mind. On the high level set by this frame, the fluctuations of unemployment in England were "normal" in our sense. Taking the number of unemployed insured males as an indicator, and recalling that in 1930 figures rose above the one-million level of the twenties, we find them moving at or above 2 millions (practically) throughout 1931 and at nearly 2.4 millions during 1932, which also in this respect was the worst year though prices were stable enough. A sharp decline followed in 1933, which again tapered off through 1934 and part of 1935 and then went on at an increased rate, approaching the one-million line in the third quarter of 1937. In December 1937 a hyperseasonal increase occurred and a little above the figure then reached (1.31 millions) unemployment remained through July 1938. There is, barring external factors, no reason for expecting very great improvement in the situation within the next two or three years. But the armament or other spending programs may do something. Also migration has got under way and may reduce the "level" of the shorter fluctuations.

This behavior of unemployment is strictly within the cyclical schema and reveals little, if any, influence from monetary policies. The descent was not slower or smaller, the recent ascent not quicker or greater than we should expect under English conditions, taking account of the burdens imposed on the economic organism. But the inequalities as between areas and industries cannot be sufficiently stressed.[1] In June 1936, for example, unemployment percentage in London, the South-east, the

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in this point, commended even by writers not otherwise in sympathy with it. There is point in this comparison, but it is worth while stating in what it consists. As far as changes in the productive organism involve geographical shifts of large numbers of workmen families, no administrative device could entirely avoid the emergence of what would still be unemployment in the economic sense. Though "temporary," it might have to last for years, although a vigorous administration might prevent it from showing by commanding the workmen to do something meanwhile. It is true, however, that such periods need not last as long as they are likely to last in a capitalist organization. If workmen can be ordered about regardless of their will and immediately incur severe penalties in the case of disobedience, the importance of this, as well as of other sources of unemployment, will naturally be much diminished. No theories about vanishing investment opportunities are necessary to account for that large increment of unemployment which owes its existence to the fact that in modern capitalism the workman is a free and very powerful citizen. Unwillingness to admit this palpable truth is one of the reasons why so many of us take refuge behind theories which without that inhibition they would hardly think worth discussing.

[1] *Cf.* the highly instructive analysis by D. G. Champernowne, The Uneven Distribution of Unemployment in the United Kingdom *Review of Economic Studies* for February, 1938. It must be remembered that these percentages refer to all insured persons from which English unlike German, legislation excludes domestic servants.

South-west, and the Midlands was 7.3 per cent, while in the North-east, North-west, Scotland, Wales, and North Ireland it was 18.7. In August 1936 the unemployment percentage in all industries was 12.1;[1] but in tramway and omnibus service for example, it was only 2.9 and in shipbuilding and port transport 30.5.[2] In electrical engineering it was 2.6 per cent in the first of the two areas mentioned, and 6.3 in the second. These examples suffice to show the range of differences, which conclusively proves that much of the total volume of unemployment was intimately linked to conditions peculiar to individual industries and that a great part of the phenomenon must be missed by aggregative theories, diagnoses, and remedies. This does not mean, of course, that "causes" are not amenable to general formulation. On the contrary, these differences are the very results of our process of reorganization and elimination, which we designate by the term *competing-down*, including therein the geographical rearrangement. We are faced both with states of disequilibrium and with a movement toward a new equilibrium. Hence, however serious the temporary difficulties and hardships, the problem is, as far as that goes and barring the probably permanent social pressure exerted on the capitalist machine, not in itself a permanent one. It has nothing to do with structural peculiarities of capitalism—other than the one mentioned in a previous footnote—and, in particular, nothing with any inherent inability of the capitalist mechanism to attain equilibrium or with any inherent tendency of it to establish subnormal equilibria.

The wholesale price index of the Board of Trade rose, after its relapse in 1932, considerably in 1933 and then remained, first because of opposite movements in prices of foods and nonfoods, then because of all-round stability, about at the level attained until the third quarter of 1935, when, agreeable to expectation, a general rise set in. This rise, in which prices of materials were the dominant component, lasted to July 1937—exactly as long as it should have lasted according to the cyclical schema—and for that month carried the index to 80.2 per cent of the 1924 average, *i.e.*, near the 1929 average (82.2). Cost of living (index of Ministry of Labour corrected for seasonals) stayed longer on the level reached by the relapse of 1932 and did not rise materially until the spring of 1935. Then it attained a maximum of 92 per cent of the 1924 average in April 1938 and thus also came near to the 1929 average, which was 94. Though regular as to fluctuations, this behavior both of wholesale prices and of

[1] It fell to about 10 per cent in September 1937, at the high-water mark of prosperity and with acute shortage of especially skilled labor in some lines and places. And this 10 per cent covers 5.3 for London and the South-east area and 16 per cent for the Northern area, Wales and North Ireland displaying respectively 19.6 and 21.

[2] *Cf.* Sir W. Beveridge, An Analysis of Unemployment, *Economica* for November 1936 and February and May 1937.

cost of living is not quite what we should have expected from our model. Recovery and prosperity should have done little more than put a temporary stop to the fall, and price-raising policies all over the world must be held responsible for the rest. So far as the rising level was due to the increase in the prices of imported raw materials, it obviously cannot have contributed much to English recovery, although it may have stimulated exports indirectly. The terms of trade ceased in 1936 to be as favorable as they had been during the six preceding years.

Pressing the new Index of Average Weekly Wages compiled by the London and Cambridge Economic Service, into a role which, as we know, it is not quite qualified to play, we will note that money wage *rates*, which had been very stable at the 1924 average until the middle of 1928, ½ of 1 per cent below it to January 1930 and a little over 98 per-cent of it until January 1931, went on slowly falling through 1932, reaching 94.5 for the last quarter of that year. Then weekly wages began to rise, continuing to do so for the rest of recovery and through prosperity. The maximum of 103.25 was not, however, reached until April 1938, *i.e.*, after recession had set in. They have remained at that level until the time of writing. This, as compared with 1924, makes a gain in real rates of about 15 per cent, or about 6 per cent as compared with 1929. Thus the new policies reduced, but did not eliminate, the increase in real rates which at that juncture our process would normally produce.

Total money wage bill (including salaries)[1] was at a minimum for 1932 (2,223 million pounds, as compared with 2,251 million pounds in 1931 and 2,430 million pounds in the maximum year of the twenties, 1929) and not much higher in 1933 (2,269 million pounds) but both years were above 1929 as to real wage bill—the total real income of wage and salary receivers thus behaving in a way which again negatives the idea of unrelieved gloom. The figures for 1934 and 1935 (2,364 and 2,457 millions) answer well to our idea of the behavior of money wage bills in a normal recovery. The astounding steadiness of the English developments and the complete absence of "inflation"—so impressively associated with the mildness of the downturn, 1937–1938—is still more obviously reflected in the behavior of total monetary home-produced income minus government expenditure (the maximum in the twenties, 3,592 millions, occurred in 1925 as the cyclical schema would have led us to expect), which was at its cyclical minimum of 3,138 (1929: 3,553) millions in 1932 and recovered to 3,745 millions in 1935. London country and provincial clearings tell the same tale, which is confirmed by new corporate capital issues for domestic purposes—which did not really revive until 1935—and by the course of prices of industrial shares, which

[1] These as well as national income figures are taken from C. Clark, *op. cit.*, Table 39, on p. 94.

rose practically steadily from the beginning of the third quarter of 1932 to the end of the third quarter of 1937.

E. The State-directed Economy of Germany raises questions of economic and sociological principle which could be treated only within a research program much wider and more detailed than ours. The little sketch which it is, nevertheless, necessary to present will be carried to the spring of 1938.

The outstanding feature is the rapid progress, practically without relapse, toward full employment of resources in general and labor in particular, in fact toward more than that: unmistakeable symptoms of overemployment in our sense show in some industries before, in many industries in, 1937—among them measures to relieve shortage of labor.[1] The Berlin Institute's index of total industrial production (1928 = 100; 1929 = 101.4; 1932 = 54) rose in the monthly average to 95.3 for 1935, 107.8 for 1936, 118.8 for 1937, 120.7 for the first quarter of 1938, 125.9 for April 1938 (April 1937 = 118.5), the index of what the Institute classes as industrial producers' goods, from little over 40 at the beginning of 1932 to 135 in April 1938 (equipment goods alone, from about 30 to 138), that of industrial consumers' goods, from less than 70 to 110. The production of raw steel rose to almost 20 million tons in 1937 (United

[1] The significance of what in our terminology is overemployment of labor (employment greater than neighborhood employment) has been questioned on two grounds. First, it has been pointed out that German statistics include in the number of employed, persons who in the United States would be counted as unemployed. Absolute figures of employment and still more of unemployment are, in fact, internationally incomparable. Although comparison of changes is less misleading, we recognize this by stressing the obvious symptoms of the presence of a problem of shortage. If full employment were merely statistical, there would obviously be no endeavors to cope with shortage (considering the level of wages which precludes the possibility that it is cheap labor that is lacking) by allowing temporary immigration, increasing hours, increasing the employment of women, reinserting older workmen, and the like, and no measures would be taken about it, such as the decree of June 1938, introducing general compulsory service for "tasks of particular public importance." The statistical decline of unemployment from 5.7 millions in April 1932, to 0.4 in April 1938, hence, cannot be dismissed on this ground. At the end of May 1938, 195,000 industrial standard jobs were vacant.

Second, it is of course true that the rebuilding of the army, the party troops and party activities in general, working and other camps and similar organizations for the young, and workmen's holidays absorb a great many people. But some who are thus absorbed do work which would have to be done in any case, such as traffic regulation and even industrial work. Moreover, the increase in the employable population must be set against that absorption, as well as the increase in women's and foreigners' employment and the higher retiring age. Finally, the increase in the total number employed, from April 1933 to April 1938, was (insured persons including servants and salaried employees) about 7 millions, that is, greater by about 2 millions than the decrease in the number of unemployed. The amount of invisible unemployment in 1933, though considerable, cannot have been nearly so much as that.

States: 51.7) and surpassed this record in the first quarter of 1938, reaching an all-time peak in spite of the shrinkage in exports. Domestic orders received by the machine industry for the first months of 1938 were almost exactly seven times the monthly average for 1932, motorcars produced (passenger and trucks) over six times. Electric power production nearly doubled between 1933 and 1937. Value (current marks) of industrial and commercial construction[1] (1932: 0.6 billions) did not rise at all in 1933, moderately in 1934 and 1935, and significantly only in 1936 and 1937 (to 1.8 in the latter year), and the value of dwelling-house construction (1932: 0.8) percentually still less (to 2 billions in 1937). If, nevertheless, the building industry worked at full capacity from 1937 and efforts had to be made to economize labor and materials, this was due to public building (1932: 0.9 billions) which increased by leaps and bounds to 6.2 billions in 1937. Total physical volume was then considerably above—that of dwelling-house building about at—the level of 1928 and 1929, though it is difficult to say exactly by how much, because of the change in the combination of cost factors that has occurred. The Institute's index of building costs rose from 1933 on but in 1937 still stood at only 76.8 per cent of 1928.

This is exactly the kind of performance that our model would have led us to expect from unfettered capitalism. Very obviously, however, capitalism was not unfettered. In trying to diagnose the nature and effects of government leadership and control, we may discard the policies which revolutionized the structure and organization of the agrarian sector: vastly important though they are from other standpoints—in some respects, perhaps of seminal importance for the solution of the farmer's problem—all that need be noticed for our purpose is that the index of agricultural production was in the average of 1934–1935 to 1936–1937 higher by 19 per cent than in the average of 1927–1928 and 1928–1929, and that the index of agrarian prices in 1936 and again in 1937 was about 32 per cent above its minimum at the beginning of 1933.

We may also dismiss the policy of forcing exports by means of arrangements about blocked marks, a direct subsidy, and bilateral agreements. This policy, which helped to increase values (current marks) by over 40 per cent from 1934 (the annual minimum) to 1937, was dictated by the necessity of providing exchange for the improvement of the foreign debt situation and the purchase of raw materials. But it counter-

[1] The data about values of construction are taken from the semiannual surveys (Deutschlands wirtschaftliche Entwicklung) published by the Reichs-Kredit-Gesellschaft. These surveys, interpretations mainly based on data of the Konjunkturinstitut and the Statistische Reichsamt, may be recommended to the reader as an introduction to German material.

acted the effects of foreign devaluations only in part, and was not greatly income generating, since the direct subsidy was financed by a levy on industry.

More important for our subject are the efforts directed toward autarky, under the influence of which values of imports, which had recovered somewhat in the second half of 1932, soon receded again and then fluctuated about a horizontal line until their rise during 1937. This policy, while its effect on welfare was, of course, negative, was an important factor in stimulating prosperity. A large part of the new investments in industry was for the development of resources that were to replace imported materials, for example, for the development of the iron-ore or the aluminum supply, of the production of synthetic gasoline or of the staple fiber or of synthetic rubber (Buna). These instances illustrate our distinction between conditioning and carrying out innovation. Had the response to that policy consisted merely in an expansion on existing lines, in an extension of, say, flax or wool production, this would have been "passive adaptation" and that policy would have constituted complete explanation. But that was not all. New things were done involving the distinct entrepreneurial act that constitutes "creative adaptation." In offering an opportunity for entrepreneurial activity in precisely those fields, that policy became no doubt responsible for many of the innovations that carried the prosperity which may be dated from the first quarter of 1935, but only in the sense implied in offering an opportunity (or providing a condition) with which an infinite number of responses would have been compatible.[1] In appraising effects it is, however, not only necessary to take account of the damage done to other parts of the industrial organism—which it is difficult to do—but also to remember that it does not follow that there would have been less entrepreneurial activity in the absence of the encouragement to press forward in this particular direction. Entrepreneurs might simply have pressed forward in others. The reader should observe that the failure to see this simple truth or, as we may also put it, the habit of exalting the importance of the particular opportunity that has actually been exploited, at the expense of the role of the opportunity-exploiting force or agent, is an old

[1] By stating that the policy of autarky, as such, conditioned but did not more than condition a certain type of innovation, we do not mean that the government did not do more than that. It gave leads. It exerted pressure. It helped in various ways in financing and promoting. Production of synthetic gasoline was, for example, subsidized by a levy on the brown-coal industry. For the expansion of iron-ore production, the Reichswerke Hermann Göring were founded, of which the Reich took most of the common stock. And there were many cases of pure state enterprise. This active leadership was, of course, something very different from mere "control" or "regulation" and also from mere conditioning. But it must be distinguished from the policy of autarky as such.

error which we have met over and over again on our way (for example, in the discussions (Chap. VI) about the "rise of capitalism") and which is a fertile source of faulty diagnosis.

In a different form, the same error must be guarded against in a discussion of the conspicuous success of the spending policies of the German government. We must strictly distinguish between two types: one of them was simply of the pump-priming kind—the German words being, as before, *Ankurbelung* and *Arbeitsbeschaffung*—in the sense that it, and other expenditure induced by it, was *additive* to that system expenditure which would have obtained in its absence, while the other was *substitutive* in the sense that it took the place of part of that system expenditure. This distinction does not coincide with that between income-generating expenditure and non-income-generating expenditure, for public expenditure may be strongly income generating and yet need not be additive in that sense: it would not, if income-generating private investment were, for example, at the same time curtailed by the same amount. We cannot, of course, draw the line according to the objects for which given income-generating outlays were made. Roads, canals, public buildings, beautification of cities, armaments may all come into either category, although we will call the second category "armaments," a potiori, in spite of the fact that such things as the Rhine-Danube Canal (act of May 11, 1938) also enter into it. But we can pretty definitely draw a line in time: income-generating expenditure, whatever its motive, was primarily pump priming or additive until about the first quarter of 1935 and primarily substitutive after that.

Pump-priming income generation was, though only an enlarged edition of previous policies, part of the so-called First Four-year Plan and of a recovery policy which shows much family likeness to that of the United States. What might be termed the German AAA met a different situation in a different spirit, but is similar to its American counterpart in its aim of raising agricultural prices. The German NRA was the act of July 15, 1933 (introducing compulsory cartels). It stressed restriction of production and of real investment—by order of the Reichswirtschaftsministerium—still more than its American counterpart. Founding new firms, constructing new plants and resuming operation of plants that had been shut down, installing new machinery or otherwise increasing capacity were for definite periods prohibited in a long list of industries. Later on, these cartels were in other respects tightened and, as far as not superseded by other controlling agencies—the commissioner for the supervision of pricing in particular; decree of Nov. 5, 1934, which revived an office already created Dec. 8, 1931—made a permanent instrument of government control over production. But as a part of recovery policy, prohibition to invest, except in special cases (*e.g.*, prohibition of opening

new retail shops), was discontinued as soon as it was thought that it had served its recovery purpose and replaced by compulsion to invest according to government order. The first case (October 1934) thus taken in hand was that of the brown-coal industry mentioned in the last footnote. It was organized into a compulsory "community" (*Gemeinschaft*) and directed to make a levy on its members with which to finance the Braunkohle-Benzin A.G. for the purpose of developing hydrogenation.[1]

Within this arsenal of recovery measures pump priming went on by means of relief and public works expenditure, as elsewhere largely financed by short government paper discounted at the Reichsbank or taken under rediscount promise of the Reichsbank by banks, saving banks, and other institutions. It is not easy to estimate its amount, but excluding the investment done by the state railways and the post office the writer believes it to have been, until the middle of 1935, of the order of magnitude of from 3 to 4 billion marks.[2] Previous argument justifies the statement that this expenditure, coming as did the American spending program of 1933, after the event, *i.e.*, after the lower turning point of the cycle, did not break the spell of a depression that would otherwise have kept the system indefinitely at the minimum point. But its success in helping and accelerating recovery was striking, as shown by the unbroken improvement and the rapid rate of absorption of unemployment. Since such success does not attend all pump priming, it is reasonable to attribute it to the manner in which it was done in this case and to concomitant policies. The sums disbursed were comparatively moderate. They were expended with strict economy. Creation of purchasing power was an incident, but it was not pursued as an end. Speculation was not encouraged. Infraction of social discipline was discouraged. No attempt was made to raise costs. Monetary wage rates, in particular, were regulated with a view to stability at a level not much above depression minimum (see below). Saving and accumulation were encouraged, or as little discouraged as possible, and in many instances enforced.[3]

[1] As we shall see below, compulsion to invest in some lines frequently implied prohibition to invest in other lines; but these prohibitions were no longer dictated by the recovery purpose and carry a different meaning. There was a third class, *viz.*, the restrictions dictated by the raw-material and exchange situation. These, however, do not interest us here.

[2] The three programs for providing employment (*Arbeitsbeschaffungsprogramme*) alone amounted to 1,900 million marks. The writer has added the whole of the government subsidies for repairing buildings (500 millions) and a highly conjectural part of the expenditure on motor roads and other items of public construction not included in those 1,900 millions. The chief difficulty is in determining how much of the total created additional income.

[3] Space forbids our entering into technique, but the main headings must be mentioned. First, that policy of wages was on balance conducive to increasing the sum total of savings. Second, taxation was at first somewhat readjusted in a way favoring savings and later on,

And all this minimized dislocating and maximized precisely that part of stimulating effects which does not produce relapses. The strength of the "fascist" state as against group interests, and its fundamental attitude to economic life—which for it is not an end in itself but a subordinate servant of extra-economic national goals—in this case facilitated a behavior in accordance with the rules of long-run economic rationality.

Government expenditure was not less conspicuous and government leadership was more so in the subsequent prosperity than it had been during the recovery. But it thenceforth acquired a different economic character. We speak of armament expenditure as belonging to a different category, neither because it was evidently not motivated as a pump-priming measure—that would not matter—nor because it was not income generating—for it was—but because it was not additive in the sense defined above. There is, of course, no reason to believe that results would have been any different if the government's demand had been for washing machines and baby carriages instead of for war equipment. But there is also no reason—other than an *ad hoc* assumption based on prejudice—for believing that, once started upon the road toward full employment, the system would have failed to reach it and to embark upon a prosperity phase if there had been no such government demand at all. For, on the one hand, an equal amount of existing monetary means and of facilities for creating additional ones would have been released to firms and households, and, on the other hand, private investment programs abounded and households were obviously not averse to expanding private consumption. That this was so is proved by the fact that, in order to finance, and to provide the physical resources for, its own program of investment and consumption—guns are consumers' goods—the government had to place severe restrictions on private issues, real investment, and consumption alike. In particular, the restrictions on issues and investments other than those within the government program can no longer have been motivated by a wish to overcome depression. Hence,

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when the burden had to be increased (*e.g.* by the increase in the corporation tax from 20 to 30 per cent, August 1936), it was done in a way which did at least not differentiate against saving. Third, by an act regulating the distribution of profits of corporate enterprise (Dec. 4, 1934), limitations were imposed not on undivided but on distributed profits. Fourth, where real investment in industrial plant and equipment was made compulsory, this was done in such a way as to make saving or accumulation practically compulsory too. Fifth, interest, while regulated, was regulated at a comparatively high level. This may have had something to do with the increase in saving deposits—though the reader knows how little faith the writer places in any figures about saving—which (annual increase in saving banks and other institutions) was as follows: 620 million marks in 1933; 957 in 1934; 1,244 in 1935; 1,084 in 1936; 1,823 in 1937. The Reichsamt estimates (this, however, is still more doubtful) the total amount of monetary savings at 1,571 millions for 1933 and at 6,895 for 1937.

they also, like government expenditure, acquired a new meaning: they were continued in order to reserve, for the government, factors of production which were known to be on their way to other employments and had to be deflected from them. But this implies that government did not create a demand for those factors which would otherwise have been lacking, but that it only substituted its own demand for that which would otherwise have been forthcoming from other sources—which is what we wished to prove.[1]

The argument does not deny that the presence of so obvious, strong, and steady a demand greatly *facilitated* matters, and still less that the government's labor and saving policies substantially contributed to the success revealed by the output and employment figures. Nor does it deny the importance of the momentous change involved in the fact of actual management of industry by the state. But it still follows that the prosperity was only state-directed and not state-created and that it, hence, fits very much more closely into our schema than one would believe at first sight. The developments to 1937, in fact, make perfectly good Juglar recovery and prosperity phases. The interesting question as to what inference that suggests about future cyclical phases in the German economy and, in particular, depressive ones is perhaps not difficult to answer. Theoretically it is possible so to plan the sequence of innovations as to iron out cycles; but after supernormally strenuous periods of advance there will be recessions in our sense even in the corporative state; most of the symptoms of depression, however, need not occur at all or can be made to disappear promptly by so powerful a central authority.

It remains to survey in the light of the above analysis the behavior of a few additional series. Prices were strictly regulated and, owing to the practically complete socialization of Germany's international economic relations, divorced from foreign levels and deprived of any influence on international movements of commodities. Moreover, they were also subject to all sorts of distortions resulting from the German situation. But they did not on that account entirely fail to conform to the logic of our model. This is due to the fact that regulation asp racticed not only

[1] For the obviousness of that proof we are indebted to the government's determination to do the thing in as uninflationary a way as possible. If instead of—practically—commandeering the productive resources of the nation, it had bid for them in free markets (which could have been done only by means of much additional credit creation), its demand would have been additive, and it would have been more difficult to show that in real terms our diagnosis would have held true even then. It should be observed that while a much more general (and also more correct) theoretical argument could be produced in support of the economic truth we strive to grasp, our proof makes use only of the particular conditions of present-day Germany and, hence, cannot itself be generalized. Nor does it prove that the intensity of prosperity under state leadership was exactly what it would have been without it. It might have been less intense. It might have been more so.

caused but also avoided some of those deviations which under modern conditions of pricing we are likely to meet. During the five years that have elapsed since the government came into power, the index of wholesale prices rose (April 1933 to April 1938) from 64.8 (1928 = 100) to 75.4. But this rise was due mainly to the prices of agricultural products and of imported materials—rubber rose by over 600 per cent. Finished industrial producers' goods fell somewhat, while finished industrial consumers' goods rose by almost 25 per cent. The official index of cost of living rose during the same time by 8.5 per cent.[1] The picture thus reflects the tendency appropriate to the Kondratieff phase if we take account of a number of circumstances peculiar to Germany. It does not reveal any intention of government to raise the price level as such. Excepting the agrarian sector, there seems in fact to have been no tendency to use increase in prices as a stimulant. On the contrary, efforts were made to prevent the expansion of the circulating medium from having that effect. Nevertheless, and in spite of the continuing—though perhaps decreasing—losses incident to the policy of forcing exports, of increases in operating costs due to increasing prices of raw materials or to the unsatisfactory nature of substitutes or to working beyond optimum capacity, and of increases in total cost due to the necessity of liberal allowances for depreciation, industrial net earnings increased through all the years under survey. But they did so at a decreasing rate suggestive of the approach of recession. So did stock prices.

That price policy was made possible by the government's wage policy, which up to the point of full employment produced the very results that we would expect under conditions of perfect competition. According to the official data, average annual hourly rates rose to only 76 pfennigs for 1937 (from the minimum of 70 in 1933) roughly as cost of living[2] and thus remained far below the maximum of 1929 (96 pfennigs) in monetary, and somewhat below it (by about 3 per cent) in real terms. This policy of

[1] One reason why cost of living did not increase more than that was the unrelenting pressure that was exerted on retailers' margins. In food retailing net revenue of many small shops is said to have fallen to as little as 1,000 marks, the equivalent in purchasing power of roughly $300 to $400 per year. Of course, this was due not only to price policies but also to various restrictions which limited physical volume of sales, increased difficulties in purchasing, and to other causes. Fundamentally, there is hardly room for the independent retailer of the capitalist type in a community that extends regulation to consumption.

[2] If welfare considerations were relevant to our subject, we should have to take account, on the one hand, of the change in the taxation of wages (3.5 per cent to 1929, then 3 per cent to 1932, 3.5 per cent for 1933, then 4 per cent and 4.5 per cent for 1936 and 1937; including poll tax; data from Reichsamt, Institut für Konjunkturforschung and reports of Reichskreditgesellschaft) though not the contributions to social insurance, and, on the other hand, of a number of benefits, holidays, cheap excursions, marriage loans, protection against dismissal, and the like that are difficult to evaluate but of considerable importance.

making and keeping labor a cheap factor of production greatly helped to increase the total income of the working class. The industrial wage bill just about doubled in utter disregard of high-wage theories between 1933 and 1937 (1933: 5,921 millions; 1937: 11,900 millions; the Saar country being, for the sake of comparability, excluded in both years). An investigation of the Berlin Institute states that about 65 per cent of this increase is attributable to increase in numbers employed; about 11.5 per cent to longer hours; about 10 per cent to promotion to better paid jobs; and about 13.5 per cent to increase in rates. The sum total of all wages and salaries increased only from 12.1 billions in 1933 to 20.9 billions in 1937 and total national income only from 46.6 to 68.5 billions (1929: 75.9), as a consequence of a policy which, on principle, strove to conserve rather than to reverse the downward revision of monetary values effected by the depression. Real per capita income increased all along and in 1936 and 1937 surpassed that of 1929. Though the results of recovery and prosperity were to a great extent absorbed by public consumption and investment, the consumption of the masses expanded in the field of the commodities of modern life, household gadgets and the like. It contracted in some departments, where it ran up against the exigencies of autarky. But per capita figures lend only feeble support to the widespread belief that there was all-round contraction in the consumption of food. Comparison of figures for 1937 and 1929 shows indeed, significant decrease in the cases of citrus fruit, beer, eggs, and margarine; and an insignificant one in the case of wheat. But per capita consumption was higher, *e.g.*, in the cases of rye, meat, fish, butter, sugar, and coffee.

The management of money and credit was facilitated and its effectiveness greatly increased by that policy of wages, by the government's attitude toward and perfect control over savings, and by being completely entrusted to one very able man. But that part of it which interests us here[1] did not, either in the problems to be solved or in the methods of

[1] The rest of it, *viz.*, the management of the relations of the German to foreign monetary and credit systems—complete control of transactions in foreign exchange and all movements of commodities and balances was only the most obvious tool of that management—also bears upon our subject, not only through the "insulation" of the German money market which it achieved, but also through its influence upon the investment process But we cannot enter into it. It must suffice to state that this part of German monetary policy was chalked out for government and Reichsbank by the debt situation of 1932 and the methods, stand-still agreements and moratoria, by which it was then handled. The facts that certain extra-economic policies of the National-Socialist government produced a "flight of capital" and that foreign credits were both difficult to get and from the national standpoint undesirable, of course intensified the difficulties of that situation and of the problems of raw-material supply. Foreign devaluations and some repayments and repurchases, all of which reduced the foreign debt from about 19 billion marks at the begin-

solving them, fundamentally differ from English or American management. The German money market being almost completely insulated—much more so than it could have been insulated by a mere abandonment of the gold parity—the Reichsbank, while allowing its holdings of gold and exchange to dwindle to practically nothing (a little more than 70 million marks before the absorption of the Austrian National Bank), secured powers to embark upon open-market operations and to "cover" her notes exclusively by domestic bills and certain types of fixed-interest securities through the legislation announced Oct. 17, 1933. It also secured more stringent control over other banks through the Banking Act (Gesetz über Kreditwesen) of 1934. Thus armed, it immediately set about expanding the volume of credit, but only within the requirements of pump-priming public expenditures. To the end of 1935 it increased—together with its affiliate, the Gold Discount Bank—what we may term central credit outstanding (very roughly corresponding to federal reserve credit outstanding) by about 2.7 billion marks, which was sufficient to unfreeze what in 1933 and 1934 there still was to unfreeze in the industrial and the banking structure and to help the market to absorb the various kinds of short government paper which financed that expenditure (about 1.5 millions of tax refund bills—*Steuergutscheine*, introduced by the Papen plan—several billions of bills for the financing of employment—*Arbeitsbeschaffungswechsel*—other special bills—*Sonderwechsel*—and ordinary treasury bills, all of which produced a net increase in all kinds of bills outstanding of between 5 and 6 billions, or about 50 per cent, from the last quarter of 1932 to the last quarter of 1935). No great pressure was brought to bear on short rates. In fact, the method of allowing that mass of short paper to go to the open market relieved member banks of idle funds and idle facilities and thus of the necessity to compete for other outlets. Short rates fell in the natural course of things, but remained comparatively high throughout: bank rate

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ning of 1933 to about 10 billions at the beginning of 1938, brought but little relief. Under these circumstances a policy developed from what at first had been temporary emergency measures. It may be described either as an attempt to secure some effects of devaluation without devaluating or, more tellingly, as graduated devaluation, the rate varying from about 40 per cent to zero. The state, completely controlling foreign economic relations and therefore being in the position of a discriminating monopolist, discriminated by means of a schedule of prices for marks graduated according to the use to be made of every one of them and to the elasticity of the demand in each use: holiday making in Germany, for example, is for the foreigner a highly substitutable commodity, hence the offer of a particularly cheap traveling mark. It follows that it is not correct to say without qualification that Germany has not devaluated at all, but that it is also not correct to say that the official parity price of the mark is meaningless and nothing but a sham. If it were a sham, the method of export subsidies, which is highly distasteful both to government and industry, obviously need not have been resorted to.

stood at 4 per cent from 1933 to 1938, rate on prime bankers' acceptances (*Privatdiskont*) fell only from 3.88 to 2.88, daily money rate from 5.11 to 2.63. This need not have been so. But recovery was financed at relatively high rates in order to facilitate normalization, which was kept steadily in view. Long rates were in some sectors reduced by government action, but where they were not, especially in the bond market, adaptation to the liquidity in the short market was allowed to proceed but slowly. Prices of 6 per cent industrial bonds reached parity only in 1935—they remained above it after 1936, when the rate was reduced to 5 per cent—and the price of 4.5 per cent governments—until the conversion of Mar. 31, 1935, the rate was 6 per cent—did not approach it until May 1938 (99.7).

"Expansive" short financing continued during the prosperity, but it was increasingly replaced by government issues offered for public subscription. These had been insignificant in 1933 and 1934, but amounted to 1,636 millions in 1935; 2,670 in 1936; 3,150 in 1937; and to 1,934 in the first quarter of 1938,[1] when a program of normalization was announced. After one more issue of the "expansive" type—not rediscountable, however, at the Reichsbank, though eligible as collateral for loans—financing by "special bills" was to be discontinued; the Reichsbank was to help in absorbing the existing ones but no longer to rediscount them or any new ones; the Reich was to finance from taxation or ordinary loans, industry and trade from ordinary bank credit. In itself and barring disturbance by political events, this program is perfectly sound both in the sense that it is possible to carry it out and that there is no reason why doing so should produce a normalization crisis. But very heavy taxation is an essential element of it. In consequence of the increase in incomes and in rates of taxes, the revenue of the Reich increased by 7.3 billions between the fiscal years 1932–1933 and 1937–1938, and there is, of course, the decline in expenditure on unemployment relief amounting to nearly 2.5 billions. But the tax on corporate earnings contributed over 1,400 millions to that increase, and the income tax—exclusive of the tax on wages—nearly 1,700. Whether in the fascist state the effects of this will in the long run differ from those we should have to expect in other social conditions, remains to be seen.

The behavior of banking series reflects the processes of state-directed and state-financed recovery and prosperity, and can be easily interpreted from this standpoint.[2] When foreign observers in the second quarter

[1] Redemption of all kinds of public debts during 1935 to 1938 amounted to 1,750 millions according to the Reichskreditgesellschaft.

[2] This, however, applies only to the most general contours. As we have seen before this, German bank statistics are anything but easy to analyze in detail. Difficulties have, among other things because of the multiplication of intermediate instances (*Arbeitsbe-*

of 1933 inferred from the continuing shrinkage of loans and deposits—by deposits we mean the German *Kreditoren* and not deposits in the German sense—that there was no genuine recovery, they not only overlooked that foreign devaluations and repayments to foreign creditors would automatically produce a shrinkage of balance-sheet items, but also that the domestic processes of unfreezing and of repaying emergency credits would naturally have the same effect. But German observers who did not fail to urge this, still expected that expansion of member bank credit would presently set in. Consequently they were disappointed at what looked like absence of "secondary effects," the failure of public expenditure to stimulate private investment, and so on.[1] In fact, the *Debitoren* (loans) of the five great banks even declined throughout prosperity and were but little over 3 billion marks by the end of 1937, after having been a little over 4 billions at the end of 1933 and about 6 billions at the end of 1929.[2] Their deposits including "saving" deposits, over 10 billions in 1929, moved on a falling level through 1935 and slowly recovered to but 6.8 by April 1938. Cash also declined.[3] Bills, however, mostly of course the "special" bills, more than doubled from the first quarter of 1933 to the last quarter of 1937 and investments—owned securities, *eigene Wertpapiere*—also increased considerably.

There is nothing to wonder at in this picture. Its features are the consequence of government financing. Business did not go to banks for what it received from government, hence business expansion did not directly show in bank statistics except in money in circulation—which amounted to 5,418 at the end of February 1933, and to 7,219 at the end of February 1938, the last figure unaffected by the annexation of Austria

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schaffungsbanken and other) and because of the lumping of "special" with other bills, not decreased since 1932. We shall confine ourselves to the Reichsbank and the big Berlin banks, but will take this opportunity to mention two additional points. First, we have seen what plight the municipalities maneuvered themselves into by their liberal expenditure during the twenties, which during the crisis issued into complete breakdown of municipal finances. One of the first tasks of financial reconstruction was, therefore, the refinancing especially of their short debts which was done by the Gemeindeumschuldungsgesetz. Second, in order to keep the figure of Reichsbank credit outstanding as low as possible, the Golddiskontbank issued one-name paper (*Solawechsel*) to the banks in order currently to absorb their liquid means and to use these for relieving the Reichsbank.

[1] For some of these comments, as well as for Professor Bresciani-Turroni's interpretation, see the latter's article, The Multiplier in Practice: Some Results of Recent German Experience, *Review of Economic Statistics*, May 1938.

[2] The commodity loans (*Warenvorschusse*), which at the end of 1929 had reached 2 billions, were but a few hundred millions throughout 1935 to 1937. We do not emphasize the decline in financing of international trade (Rembours-Kredit) and in stock exchange loans (Reports) because they are accounted for by obvious special reasons.

[3] Since a very large part of the other assets could at a moment's notice be liquidated at the Reichsbank, there was, in fact, little object in holding cash beyond current requirements.

—and in the bills.[1] And multiplier effects and the stimulation of private investment show during recovery in the sphere of production and employment rather than in the sphere of regular bank credit, while there is no point at all in looking for the former after full employment had been reached. Those effects are, no doubt, difficult to evaluate, but during what we have defined as the pump-priming period their presence seems clear enough wherever they were not obstructed by difficulties about raw materials and so on. During what we have called the armament period —the prosperity phase—the monetary processes of an ordinary prosperity were replaced by the monetary processes of a state-financed one, as other processes were by the processes of "investment" for the purposes of armament and of autarky (the Second Four-year Plan). The tapering off of pump priming thus becomes invisible, because the flow of prosperity expenditure also originated with the state, but it was nonetheless real. Demand for bank loans was not forthcoming, because expansion in lines other than those which government approved and largely financed was impossible. For the same reason—which here stands out still more clearly because of the prohibition of all but government-approved issues —the late and weak revival in new industrial bond issues does not prove anything. They were insignificant until 1937, when they amounted to 258 millions. Issues of shares increased steadily from the minimum in 1933, but amounted to only 395 in 1936 (333 in 1937; the maximum was 1438 in 1927). But no inference about absence or weakness of the entrepreneurial impulse follows under the circumstances.

F. Recovery and Recovery Policy in the United States from 1933 to 1935.—What, according to our schema, should have been a Juglar recovery covers the period from the autumn of 1932 to the first months of 1935.[2] Separate treatment is necessary, not only because of the difference in phase, but because of the presence of another difference which while, strictly speaking, but one of degree is so important as to amount to one in kind: while, as we have seen, recovery policy was a distinctly minor factor in 1931 and not of decisive though of greater importance in 1932, it thenceforth dominates the scene. This is so obvious as to raise the question whether there is any sense at all in going on speaking of cyclical phases and trying to date them, or to relate actual

[1] The Reichsbank's holding of bills other than ordinary treasury bills was, for the same two dates, 2,439 and 5,637 millions.

[2] More precisely, our experimental count gives from the middle of November 1932 to March 1935 inclusive, and within this period a Kitchin recession to the end of August 1933, a Kitchin depression to the middle of June 1934, and a Kitchin revival covering the remaining months. Again, this is not intended even as a reference schema but merely as an illustration. But it should be observed that, properly understood, it is not out of step with actual events.

business situations to our process. Many economists would not hesitate to answer in the negative. Theories have, in fact, been offered which are explicitly or implicitly based on the hypothesis that either from 1914 or from 1929—the beginning according to some writers of a series of completely new vicissitudes of capitalism that are unheard of in the sense that previous history does not present anything at all comparable—or, finally, from 1933, a new economic pattern has more or less suddenly emerged which superseded the previous one for good and calls for a new analytic model and fundamentally new assumptions as to both data and mechanisms, especially with respect to the investment process.

We are not concerned with the methodology underlying those theories and with their intrinsic merits or demerits.[1] We are face to face not with a question of principle but with a question of fact. The only principle involved is the one which has been stressed throughout this book and which rests on the *certainty* that the economic process of capitalist society will eventually turn into something fundamentally different and on the ever-present *possibility* that our process be temporarily blotted out by the action of more powerful factors, such as, for instance, ruled events in Germany 1914 to 1923. As to the facts, we not only know that all the essential features of the postwar period up to the world crisis, but also those of the world crisis itself answer perfectly to expectation from our model, *i.e.*, from past experience. Moreover, we know something else that sweeps from our path what otherwise would, as we know from the theoretical discussion in Chap. IV, be an extremely thorny problem: we need not ask whether the system "could have" recovered without political action stimulating it out of a state of prostration. For it did.[2]

[1] The writer's opinion about them is contained in the argument of this book as a whole and cannot be put into a few words. But it is useful to remember that that question divides up into the questions of logical correctness of those models and of their "fit," which are entirely independent of each other. A pattern of reality, its meaning, and its tendencies may be correctly seen by an economist who yet blunders in constructing his theoretic model. And a model may be entirely correct in itself and yet fail to fit the facts and especially the tendencies enshrined in contemporaneous fact. The present writer feels that if he were at this moment to attempt the task of comprehensive criticism of current theories, he would have to stress what seems to him a large amount of error of both kinds, partly resting on unwarranted generalization from recent experience. But he also suspects that if he were to attempt this task 10 years hence, he would have to defend the kernel of truth that in both those respects these theories contain. Comments on some of those theories will be offered at the end of Sec. G.

[2] The author, who so often is painfully aware of the fact that his argument has to contend against a powerful aversion to its real or supposed implications, thoroughly enjoys the psychological vantage ground over which he is traveling at this point. For any aversion of readers against accepting the writer's opinion will be much mitigated by the only alternative open to them, which to many would be no less distasteful: whoever refuses to believe that the recovery in 1932 occurred in the ordinary course of the working of the system will have to believe instead, that Mr. Hoover turned the tide. That his administration would,

This being so, affirmative answer to our question is unavoidable: there is not only point in going on to relate the course of events to our process—in the sense that we assume every one of the successive situations to have been the resultant of the working of this process and of the effects of government action, both, of course, not only superimposing themselves on but also influencing each other—but there is no choice but to do so. For it would be contrary to all experience and common sense, though of course no logical impossibility, that a process, which can be strictly proved to have been running its course since at least the sixteenth century and right to the end of 1932, should have come to a stop suddenly on Mar. 4, 1933. It should be observed, however, how severely our task restricts the scope of our discussion of the policies of the period. What are their most important aspects to many—to those in particular, who welcome them as the dawn of an epoch of social reconstruction—must, if we are to focus our attention on the mere effects of those policies on the process which is the subject of this book, be excluded to the point of exposing the writer to the indictment that he is completely lacking in social vision and in the grasp of the broad social issues involved. While nothing can be done about this,[1] it is hoped that enough has been done to protect the argument that is to follow from the different, though cognate, misunderstanding which may result from our speaking of recovery policy as an external factor acting on our process. It has been pointed out not only that economic—or any—policy grows out of and is, though not uniquely, shaped by the economic situation with which it attempts to deal, but also that in the case before us the short-run situation in the spring of 1933 was such as to force any but the strongest

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but for the whim of the political calendar, have come out with flying colors and amidst a universal clapping of hands is, for reasons of political psychology, very plausible in any case.

[1] The very fact that we refer to the economic policy of the period as recovery policy seems to suggest not only narrowness of outlook but also the application of an altogether unfair standard. Therefore, it should at least be explicitly stated that it is fully recognized that those who framed or defended those policies aimed at much more than mere recovery and, hence, had to strike a compromise between different and in many cases conflicting aims. This conflict—"reform versus recovery"—was and is unavoidable and does not in itself constitute a ground for the charge of logical inconsistency or of error in the choice of means. But it introduced an element of prejudice and insincerity into the discussion of the recovery problem. Since what a majority of people really wanted was recovery, opponents of reforms developed a tendency to attribute to all such measures effects prejudicial to it, and advocates of social reforms, a habit of wholesale denial of the presence of that conflict. And it is against theories framed for these purposes that we have to protest. Moreover, in many cases the element of personal or group interest was as obvious in the arguments on the one side as in those on the other. In still others, psychotechnics—for instance, attacking an uncomfortable piece of reasoning by impugning the motives or sympathies really or supposedly behind it—were more in evidence than professional competence.

hands[1] irrespectively of prevailing preferences for or aversions to "planning."

1. Thus narrowed down, our task may be further simplified by excluding a number of measures which cannot have had major effects on successive business situations or which cannot have had them before 1935. Nobody will, for example, attribute major consequences to the Federal Economy Act of Mar. 20, 1933, or to the revision of veterans' claims (Sec. 20 of Independent Offices Appropriation Act of June 16, 1933) or—though some *stimulating* effect, extending beyond the industries directly affected, is of course beyond doubt in this case—to the modification and the subsequent repeal of prohibition. Most of the more than 80 acts passed by the Seventy-third Congress up to June 16, 1933, may for our purpose be dismissed as both uncontroversial and unimportant, although the sum total of them, no doubt, influenced—mainly steadied—the existing situation. The only measure of this class for which this may be and actually has been called into question is the Securities Act of May 27, 1933. The writer would have passed it by, thinking that it was not only the kind of thing that has, ever since South Sea Bubbles days, often been done after abnormally severe breakdowns revealing reckless financial practice, but also a sober and well-drafted piece of legislation, from which

[1] Two facts underlie what the reader will, according to his pleasure, call either the criminal folly or the profound wisdom of American recovery policy. First, to a greater extent than is generally admitted in popular discussion, the measures taken in and after 1933 but continue and develop what had been done or begun before. Second, the measures of social reform actually taken run on familiar European lines, some inaugurated by men as little radical as Bismarck and Taaffe (Count Edward Taaffe, Austrian prime minister 1880 to 1892), others outlined in the German *Arbeitsrecht* of the twenties. It seems bad sociology to call the United States "backward" in this respect, but many of the most characteristic New Deal measures would naturally be suggested by the simple consideration that this is no longer a pioneer country. Two more remarks on New Deal policy. a measure does not stand or fall with the arguments that are used by its promotors and cannot, for example, be called foolish merely because those arguments are; and the ultimate aims a measure is to serve are not only irrelevant for our purpose but extremely difficult, if not impossible, to know. The monetary legislation of 1933 may illustrate this. It has—even by some of its supporters—been called *inflationary*. We may perhaps feel fairly confident in diagnosing the aims of the various "inflationist" groups—debtors, speculators, silver men, exporters, and even, so it seems to the writer, banks which while standing for financial decorum were presumably not all of them sorry to have their credits unfrozen—but it is certainly beyond the writer to define unequivocally the subjective meaning of the actual measures enacted. Given the fact, if it was the fact, that "inflationist" interests were at the moment strong enough to override a veto and to have their way, the method of having "inflationist" powers conferred on the president and thus gaining time for recovery to gather force and for dealing with each of those groups separately might conceivably have commended itself to a sound-money man of classical tradition, and no doubt, bears interpretation in an anti-inflationist sense, especially as those groups were subsequently, in fact, separately satisfied in ways that salvaged considerable portions of that classical tradition. This will be shown presently.

no depressive influence could emanate. But it caused a flutter, and not only in interested quarters, the main point attacked being the construction of the liabilities imposed on issuing houses and security dealers. These, however, do not seem to amount to more than responsibility for what one "knows or ought to know" or to enforce more than the care habitually taken by any decent firm. Much more plausible reasons than this act are available in order to explain the stagnation in nonpublic issues at that time.[1]

Recovery was substantially facilitated by the Emergency Banking Act of Mar. 9, 1933, already mentioned, which provided machinery for the reopening of closed banks,[2] by the Banking Act of June 16, 1933, which introduced a number of important reforms—the most important refer to strengthening the Federal Reserve System's power over members, particularly with a view to regulating extension of credit for speculative purposes; to holding company and security affiliates; to stricter centralization of open-market operations; to branch banking, and, for us most important of all,[3] to deposit "insurance"—and by Title II of the Emergency Farm Relief Act of May 12, 1933, which dealt with the agricultural credit and especially with the refinancing problem. The Farm Mortgage Corporation Act of Jan. 31, 1934, and the Home Owners' Loan Acts of June 13, 1933, and April 27, 1934, were similarly to cope with another thoroughly frozen part of the credit structure and thus also to relieve the banking situation—they look quite conservative with the homage they pay to "local thrift." We will add further examples of measures

[1] It has been pointed out to the writer that his interpretation rests on the hypothesis that the provisions of the act are to be administered reasonably and without vindictiveness or desire to victimize unpopular interests. That is so. It is also true that ill-founded suits brought under the act may impair the position of a firm, even if its action be eventually found unexceptionable. But whatever may be thought about these and similar arguments, the conclusion that the act was no major impediment to recovery seems still to stand. For an authoritative exposition of the opposite view, see C. J. Bullock, The Securities Act of 1933, *Review of Economic Statistics*, Jan. 15, 1934. If long-run effects were pertinent to our present purpose, the case for that reform would be still stronger, however.

[2] It has been mentioned before that this act and the amendment, Sec. 13*b*, of the Federal Reserve Act (Industrial Advances Act, June 19, 1934) also provided for powers for the Federal reserve banks to lend to individuals, especially industrial concerns, but that these powers were not used to a significant extent.

[3] That Act represents the most systematic attempt that has been made to deal with what, from the standpoint of the structure and technique of banking, always struck observers as the most obvious shortcomings of the American banking system. This larger aspect is beyond our sphere. But it should be mentioned that the problem of the small and inefficient bank was attacked only indirectly and that the problem of long-term and illiquid credit was not attacked at all, except by making such loans still easier. Anything suggestive of restriction of credit, the speculative purpose alone excepted, was inacceptable to public, legislators, and experts.

of this type: the extension in various directions (insurance companies especially) of the scope of the Reconstruction Finance Corporation's assistance by the Acts of June 10 and 14, 1933; the Emergency Railroad Transportation Act providing facilities for consolidations, rationalizations, and reorganizations; and the United States Employment Service Act of June 6, 1933.[1]

These and similar measures did not make recovery. They helped to provide conditions, institutional and other, rather than stimuli, for the process of recovery to resume quickly after the catastrophe of the spring of 1933, by solving individual problems, removing impediments and potential storm centers, constructing safeguards, allaying fears, and, on balance, improving the general atmosphere—all of which would otherwise have been the source of prolonged difficulties and waste. In these respects the combined effect of the recovery measures of this type must be rated high, although, if they had stood alone, we should have no hesitation in speaking of a process of recovery propelled by the forces embodied in our model.

2. But we shall arrive at no very different conclusion as regards the two towering monuments of early New Deal policy, the AAA and the NRA. All the great and small questions of principle that surround them—especially those pertaining to the realm of welfare economics[2]—and all the ultimate effects they had or eventually would have had on the institutional framework of the economic process of this country and on this economic process itself being excluded from our discussion, we easily arrive—discarding for the moment the provisions on money inserted into the act creating the one and the labor provisions contained in the other act—at the result that, on balance, both of them promoted recovery of the usual type without replacing it by a recovery that would have to be explained on different principles. They certainly paralyzed, and replaced by others, certain parts of the ordinary capitalist machine but, taking the national organism as a whole, in a way and to an extent which was corrective rather than constructive.

[1] The Farm Credit Act (June 16, 1933) was a measure of agricultural credit policy in general, and has but little direct bearing on the particular emergency, since the safeguards provided for severely limited the granting of distress loans. The Tennessee Valley Authority Act of May 1933 would for us, but for its possible bearing upon private power finance and investment, simply come in under the heading of government expenditure. The far-reaching aspects with which public discussion has invested it and, as it were, the symbolic significance it has thereby acquired are not relevant to our subject. See Professor E. S. Mason on the Power Aspects of the TVA's Program, *Quarterly Journal of Economics*, vol. 50, p. 377.

[2] Both cases, in fact, illustrate well the rationale of our distinction between welfare and prosperity.

This is especially clear in the case of the agricultural adjustment policy.[1] As we know from previous discussions, it was to deal, unlike NRA, not with an emergency simply but with an emergency in which a long development creating fundamentally untenable conditions had suddenly come to a head. Wholesale liquidation of farms, impinging on an industrial unemployment which itself was unmanageable for the moment and which had set into motion a current of remigration to the land, would have been the "automatic" method of restoring equilibrium. The alternative to this—what we have called "orderly retreat"—precisely implied temporary or even—for those who from any of the many reasons one may have for this desired to keep alive a large and contented farming population—permanent preservation of disequilibrium in the agrarian sector to be unavoidably financed by the (normal) surplus of the industrial sector.[2] To do this would, *ipso facto*, facilitate general recovery. It would reestablish something like the previous processes in the agrarian sector and the previous relations of the agrarian to the industrial sector. Thus it would also relieve the debt and banking situation and thereby stop up a source of actual and possible cumulative depressive effects. At the same time it could not, the relative financial strength of the two sectors being what it is, exert pressure on the nonagricultural sector severe enough to open up another such source instead. This argument applies a fortiori in case the means transferred were to be created *ad hoc* or taken from sources other than that part of nonagrarian incomes which was being currently spent. But it should be observed that it would also apply if nonagrarian consumers' expenditure had been reduced by an equal amount, *i.e.*, if the agrarian Paul had really only received consumers' dollars taken from the industrial Peter. The problem thus being perfectly clear and soluble, a very simple program suggests itself of refinancing bona fide farmers threatened by foreclosure, of nationalizing the marketing of, and particularly the export trade in, agricultural products, and of strictly planning production—into which program measures of more fundamental adjustment and of further rationalization could have been inserted at will. Most of this being out of the question under the Constitution and owing to the unprepared-

[1] Since it is impossible to do justice to the subject, reference should be made to the treatment of the recovery aspects of AAA in a series of publications of the Brookings Institution. See, in particular, J. S. Davis, Wheat and the AAA, 1935; H. J. Richards, Cotton and the AAA, 1936; J. D. Black, The Dairy Industry and AAA, 1935; H. B. Rowe, Tobacco and the AAA, 1935; E. G. Nourse, Marketing Agreements under the AAA, 1935; and especially Nourse, Davis, and Black, Three Years of the Agricultural Adjustment Administration, 1937, particularly Chap. XIV.

[2] From this standpoint, much talk about justice, income or price parities, in itself open to rather obvious objections, acquires perfectly sound meaning.

ness of public opinion, the well-known devious route was chosen (Title I of the Emergency Farm Relief Act of May 12, 1933), which raises a long string of problems peculiar to it, incidence and other effects of processing taxes among them.

But provided we agree that the net effect was to increase farm revenue considerably, we need not go into those problems since then the rest, *i.e.*, the proposition that a contribution was made to general recovery, automatically follows. In order to take this view, it is not necessary for us either to accept palpable exaggerations of the role that the farmers' plight played in the general depression, such as a prominent authority has been guilty of in stating that 60 per cent of all the unemployed "lost their jobs because of the reductions in rural buying power"; or to share the opinion of fervent advocates about the effects of agricultural recovery on general recovery, some of whom went so far as to call the advantages accruing to agriculture a mere "incident" of a general benefit conferred on the nation; or to fall back upon doubtful theories about effects through an incident decrease in savings or, somewhat less incorrectly, nonspending; or, finally, to overlook the role of the droughts, of the depreciation of the dollar, and of general recovery itself. Net results, which are all we have, are at best difficult to interpret, and the panegyrics of the administration of the agricultural adjustment act on its own activities no doubt bear discounting. If, for example, we read in its first report that in rural communities delinquent taxes were being paid, debts owing to banks discharged, schools reopened, orders placed for clothing, furnishings, implements, automobiles and parts, all because of AAA, we cannot help feeling that a sound case is being spoiled by overstatement. It is, moreover, not easy to determine how much of the results actually attained is attributable to the basic idea, restriction of production—"paying for not producing"—and how much to other devices that were not, or not necessarily, bound up with it, such as marketing agreements and semimonopolistic export practices. The energetic tobacco program supported by the Kerr-Smith Act scored the most striking success, in fact, considerably beyond the goal envisaged,[1] owing to particularly favorable conditions of demand. In dairying where, because of a relatively sound fundamental situation, there was much less need for action—leaders accepted what was offered to them rather than pressed for it, and there was more opposition to than support for a production program—restriction (purchase of dairy cattle) was secondary, and market agreements—in some cases supplemented by what amounted to internal import prohibitions—mainly did, not always successfully,

[1] That goal itself was not defined as in the other cases. When it turned out that the base period 1910 to 1914 yielded a "parity" which was already attained at existing prices, reasons were found for a higher "fair exchange value."

what there was to be done.[1] Leaving aside the somewhat equivocal results of the corn-hog action and other items, we will recall that the effect of the wheat program, whatever it might have been, was largely absorbed by the dominant effects of four successive bad harvests—1933 to 1936—so that, disregarding various supplementary measures of minor importance, the actual benefit to wheat farmers from AAA substantially reduced—except perhaps for 1934[2]—to the benefit payments financed by the processing tax which for the three years during which the arrangement was in force, amounted to $326 million and may be likened to a simple subsidy.

The cotton program was but to a minor degree interfered with by adverse natural conditions. Participation was extensive from the outset and became still more so under the pressure of the Bankhead Act and of various privileges (seed loans, loans of the Commodity Credit Corporation) that were confined to participants. This actually did for cotton what nature did for wheat. Curtailment of acreage for 1934 and 1935 was made more effective by destruction of roughly 25 per cent of the 1933 crop. (Annual) prices to growers for 1934 were nearly double the (annual) prices for 1932—which were depressed, however, by the government holdings of over 3 million bales resulting from the operations of the

[1] See the appraisal of J. D. Black in The Dairy Industry and AAA, 1935.

[2] Weather and restriction of acreage—more precisely voluntary restriction—were, of course, both "external factors impinging on the process of recovery" and acted in part alternatively and in part cumulatively. But it is held that even in the latter case weather was the more important factor. This may be and has been questioned for 1934, exponents of the administration claiming that AAA accounted in that year for a reduction of the crop by between 50 and 60 million bushels, or about 10 per cent. If this be so, then the statement in the text would have to be modified for that year, 10 per cent being enough to make a very considerable difference to price and value. Professor Davis (Wheat and the AAA, p. 349) estimated the difference made by AAA to acreage sown at only about 5.4 per cent. But even this would be far from negligible. It should be added that it would be nothing for the administration to take pride in if they had intensified the effects of the drought, nor a criticism of the AAA policy if they had failed to do so, but that on the contrary the latter ought to be recorded to the credit of both the arrangement and its handling by the administration. The writer believes that (again neglecting effects of supplementary measures about exports and surplus clearing in the Northwest) the drought and possibly, for 1934, AAA restriction, together with general recovery, substantially account for the behavior of wheat prices, and that Dr. Davis (*op. cit.*, p. 366) overestimates the role of monetary policy. The striking rise that occurred from May to July 1933 was certainly due to a speculative movement induced by inflationary talk, as well as by anticipation of a bad harvest and of further government action for the benefit of agriculture. But the subsequent failure of prices to fall to, say, the 1931 average cannot, except to a minor extent, be ascribed to monetary causes, because of the inadequate importance of the connecting link, exports. We do not deny that monetary policy played some role and shall mention it again below. But it is going too far to attribute to it "something like one-half" of the increase from 1932 to 1933–1934.

Federal Farm Board 1929 to 1931, to the point of reconquering foreign markets lost (partly) through the price-pegging policy of those years—and revenue of growers rose from 483 millions to (inclusive of benefit payments) 880 millions in 1933 and 893 millions in 1934. This was not even all. For without the program, the crop of 1933 would have been one of the largest on record. In this case, of course, monetary policy also counted for more (see below) owing to the relative importance of the export interest.[1]

Net costs and losses to the Treasury (including reduction of the import duty on sugar) were about 900 millions—about one-third of this being due to the invalidation of the processing tax—which may roughly be said to constitute additional expenditure within the system. Apart from this, such additional expenditure was involved in the running of the scheme though it was originally intended to be self-supporting. Whatever we may think about technique, details, aims professed, or arguments used, the success of the policy in removing a major obstacle from the road of recovery and in reviving shriveled tissues in the economic organism is beyond reasonable doubt.

3. Title I of the National Industrial Recovery Act of June 16, 1933, as embodied in the codes of fair competition, introduced a type of state-supervised industrial self-government the gist of which, stripped of phraseological mimicry and apart from provisions about labor, was legal recognition and official encouragement, amounting to compulsion, of a modified form of the German cartel which, quite independently of this legislation, tended to grow out of the activities of trade associations. Thus it is not easy to understand—except on the supposition that the mere word Planning and the mere sight of a government office are to some people irresistibly attractive—the enthusiasm with which some "liberal" economists greeted a measure which associated Planning with that very restriction and price rigidity that are usually debited, as its greatest blemishes, to the account of Big Business. But it is all the easier to understand how it helped recovery: exactly as the German cartel, it pegged weak spots within industries, stopped spirals in many places, mended disorganized markets, especially in cases of inelastic demand and of that "overproduction" which is incident to the process of underselling

[1] The Cotton Option Plan of the first year and the 10-cent and 12-cent loan policy had effects on the international position of the United States cotton to some extent similar to those of the Farm Board's pegging policy, which preceded it. On this and other points see Professor Black's article, The Outlook for American Cotton, *Review of Economic Statistics*, Mar. 15, 1935. The present writer, being in any case more pessimistic than Professor Black about the long-run possibilities of American cotton exports, does not rate very highly the unfavorable effects which policies of the type discussed may, in the long run, have on them. We are, be it repeated, merely speaking of immediate effects during that recovery.

the obsolete. There is little doubt about its effectiveness in paralyzing, in some instances, the process of industrial transformation that was going on: the failure to see that there was such a process at all or, in fact, anything else but breakdown and deadlock was part of the philosophy of the time. There is as little doubt about its effectiveness in improving, in other instances, situations in which lack of organization really wrought wanton destruction as in the cases of oil and bituminous coal[1] and others to which a less sweeping and spectacular measure could have confined itself.

Immediate results for the general business situation were, however, only the stronger because of the range over which this policy was indiscriminately applied—although very unequally enforced—and so were its purely psychological effects, which *in a situation of that kind* we have a right to consider an important factor—even Blue Eagles do count for something when, objective conditions for revival being given, it is broken morale that is the matter. Invalidation by the Supreme Court (June 1935) came when the end had been achieved and was for the administration a blessing in disguise. But aftereffects were not entirely eliminated thereby. Business had learned a lesson. The "chiseler" continued to be frowned upon. And we shall have to bear in mind that there is here a possible, if only partial, explanation of the fact that output figures failed to come up to expectation in the subsequent prosperity phase, which precisely for this reason most economists preferred to call imperfect recovery.[2]

[1] Section 9 of the Act dealt specifically with oil restriction. If it did not do so in the manner of the *Kaligesetz*, this was presumably only due to lack of powers and the necessity of avoiding constitutional pitfalls. In the bituminous coal industry technological advance, increasingly economical use of coal, and increasing use of other fuels had created, ever since the war, conditions which afford a class-room example both for the necessity and the difficulty of regulation. In 1933 and 1934 price control was tried, but it lapsed with the Supreme Court's invalidating the Bituminous Coal Conservation Act (1935).

[2] The Report of the President's Committee of Industrial Analysis formed to prepare a "review of the effects of the administration of Title I of the National Industrial Recovery Act" after the latter had been declared unconstitutional, is not in itself very interesting. But the five studies of the committee's staff (unpublished but open to consultation) and many official and nonofficial studies—especially those that emanated from the Research and Planning Division—making use of materials collected under the administration of the Act, are not only an important source of historical material but also a storehouse of problems and patterns for the analytical economist quite inadequately exploited so far. The general literature of the subject of NRA suffers both from insufficient foundation in the details of actual fact and from the preconceptions of authors, which in the majority of cases are obvious from the start and even affect statements of fact. A well-chosen sample of the more significant publications has been ably discussed by Professor Rogin in The New Deal, *Quarterly Journal of Economics*, February 1935. But such study as the present writer has been able to make has convinced him that for the very limited purpose in hand the view expressed in the above paragraphs would be substantially accepted by a majority

The *quid pro quo* which the Act and the Codes offered to possible opposition from the ranks of labor and to possible criticism of what might easily have been called antisocial tendencies, were the labor provisions. Many an objector was reconciled by the clauses on child labor, hours, and minimum wages which all codes (including the blanket code) contained, or gratified by the protection extended in Sec. 7*a* to collective bargaining, to organizing activity, and so on, which went far beyond the Norris-LaGuardia Anti-Injunction Act of 1932. The larger aspects of the progress thereby achieved in social legislation being once more beyond our scope—of a progress that many of us will consider to have been overdue—our only question concerns the effect on recovery of general labor policy and of wage policy in particular. As to the first, the present writer is confident that no inhibiting effect can be proved for the period under consideration.[1] As to the second, it follows from previous argument that, under the conditions of this country and of the prevailing cyclical phrase, the persistent official efforts to raise the whole structure of wage rates must on balance have had an adverse effect both on the expansion of output and on employment per unit of output. While this effect was probably small during the first great upward rush in 1933, the further development of output, pay rolls, and especially employment, which can hardly be said to come up to expectation, substantiates the presence of this brake (see below, sub 6). The reader will realize that this is perfectly compatible with an opposite result in many individual cases; with such truth as there is in antisaving arguments; and with recognition of the facts that the rise in price level partly absorbed and government spending partly counteracted[2] that effect. Again, and

of the economists who worked in that field, barring perhaps the analogy with the German cartel and the last sentence. The reader is referred to Professor E. S. Mason's admirable contribution on Controlling Industry in The Economics of the Recovery Program (D. V. Brown and others, 1934), and to L. S. Lyon and others, The National Recovery Administration: an Analysis and Appraisal, 1935.

[1] In other words, the mere recognition of the right of collective bargaining and the elimination of the yellow-dog contract cannot in themselves have worked against recovery. It does not follow that an organized drive, facilitated by the newly acquired opportunities for action, or further legislation on the same lines might not have done so. But no such drive or legislation occurred during the two years during which the NRA regulations of wages and hours, paralleled by regulations by other federal agencies and state governments, were in force. The question will hence have to be touched upon again in the next section.

[2] Since government spending was in part a function of the amount of unemployment, it can even be said that any unemployment created (relatively to what unemployment there would otherwise have been) by that wage policy may possibly have induced a net increase of total expenditure in the system. It will be seen, however, that this does not invalidate our argument. The Research and Planning Division of the NRA is responsible for a valuable source book (mim., January 1935) on Hours, Wages and Employment under the Codes.

notwithstanding the rise in price level, labor was made expensive relatively to real capital. Coupled with a cheap money policy, a high-wage-rate policy was, under the circumstances of phase and country, the very recipe for the production of a maximum of unemployment. It should be observed, however, that while dampening recovery, this would not necessarily affect the general character and the duration of the phase.

Let us pause for a moment in order to take stock. So far we have before us the following elements of the situation in 1933. There was first incipient recovery dating from about the middle of 1932. This incipient recovery, second, had been interrupted by the banking catastrophe in the spring of 1933 and was weighed down, independently of that, by the conditions in the agrarian sector, by the results and remains of a preceding state of overindebtedness in general, and by depressive factors special to certain individual industries. Third, on this pattern impinged the series of measures mentioned, all of which, with the exception of the high-wage-rate policy inaugurated—though this was of small immediate importance in 1933—were on balance remedial in effect, *i.e.*, not only devised in order to remove those millstones but actually effective in achieving this. Nothing more than these three groups of facts is necessary for us to expect a strong and even violent rebound of the system,[1] more than compensating for the subnormal revival during the preceding six months, to be interrupted, however, by the setting in of a Kitchin depression late in the year.

This may be expressed by means of terms which have been so uncritically used as to elicit, when used now, little else but contempt: *natural* and *sound* recovery. To the former term we assign the meaning of recovery coming about in the course of the cyclical process by virtue of its mechanism. The latter term we define as a recovery that is brought about by factors which do not carry an inherent tendency to reproduce the same difficulties as, or to produce other difficulties in place of, those that they have been instrumental in overcoming: relapse is the most obvious instance of the first type, and undoing of such work of readjustment as may result from the processes of depression is an instance of the second. It will be seen that natural and sound recovery are not made synonymous. Whether "natural" recovery is always "sound" depends on whether we exclude all those "understandable nonessentials" which may easily land the system in an untenable situation. But inasmuch as depression itself

[1] That statement, forming as it does an important link in our diagnostic argument, should perhaps be amplified and buttressed. But the writer does not see how this could be done without intolerable repetition. It should, however, be obvious that stopping spirals and reversing "psychology" would, in a situation fundamentally ready for improvement and with levels only understandable from spirals and psychology, produce a strong spurt.

is a pathological process, sound recovery need not be natural. In our case the recovery we now envisage would—whatever might have been the *ultimate* effects of NRA—have been substantially sound. And a natural recovery was at the bottom of it. But the midwife role of public authority was so important that it would not do to draw laissez-faire conclusions.

It is not implied that Congress or the administration "should" or "could" have stopped at the measures so far mentioned. The prevailing unemployment would in itself suffice to refute any such implication. But it is implied as a matter of diagnosis that to a greater extent than is commonly realized the recovery of 1933 can be accounted for irrespectively of the monetary and spending policies inaugurated at that time. For this proposition there is, it is true, no such proof as the constellation of facts enabled us to give for the cognate proposition that recovery started "of itself" and not simply in response to recovery policy. But there is a prima-facie case which is much strengthened by the fact that during the critical second and third quarters of 1933 the new spending program, being still in the incubating stage, cannot have had major, at least mechanical, effects[1] on the economic process. That substantially the same holds true of the monetary policy will be evident from the cursory discussion[2] to which we now turn.

4. When banks reopened after the "holiday" in March 1933, they were estopped from paying out gold except by special Treasury permission—redemption of notes in gold was discontinued on Mar. 4—but only an insignificant fall in the international value of the dollar occurred. On the afternoon of Apr. 19, *i.e.*, immediately after the declaration of the (partial) embargo on gold, dollars were internationally traded in at a discount of about 9 per cent and during the following eight days at a discount which fluctuated between 8 and 12 per cent. There was no panic such as had occurred in the English case. This is highly significant. It shows, on the one hand, that international speculation did not believe in a substantial depreciation of the dollar—in spite of the fact that a bill

[1] According to Mr. Currie's and Mr. Villard's figures, published by Mr. Arthur D. Gayer (*op. cit.*), net federal income-generating expenditure for the year was 1,856 millions, only 210 millions more than in 1932. If the effect was more than proportionately greater than this, it can only have been due to the difference in cyclical phase.

[2] Strictly confined to the limits set by our purpose, that discussion not only neglects details and technical aspects—such as the sequestration of gold, the abrogation of the gold clause, the stabilization fund, later on the tripartite agreement, and so on—but also major problems which for that purpose are of minor importance. The reader is referred to the literature on the subject, but Professor Harris's Exchange Depreciation, 1936, and also his article on the American Experience, *Quarterly Journal of Economics*, August 1934, should be specifically mentioned. We neglect, in particular, the silver policy although, owing to the nonnegligible importance of the relations with silver countries, *some* effects on cyclical situations have doubtless been exerted by it.

was introduced on Apr. 20 which contained the main provisions that were later embodied in the Thomas amendment—and on the other hand, that in the absence of such speculative anticipation there was no reason why the dollar, if left to itself, should fall at all. There was, thus, a complete absence of parallelism between the fate of the dollar and the fate of the English pound. The dollar was not under economic pressure either in a short-run or in a long-run sense, either from abroad or at home. We recall in particular that it had weathered the preceding storm, the third through which it had had to sail during the depression: the reserve system had the situation well in hand, and in less than three weeks after the bank holiday over half of the amount was repaid which had previously been borrowed from reserve banks in order to meet loss of gold and withdrawals of notes from all centers and of bankers' balances from New York. And almost all the losses of reserves suffered by reserve banks were made good.

What pressure there was, was entirely political, and it was not until the world became convinced of the imminence of "inflation" that the dollar really gave way. This conviction was the result of the passing of Title III of the Agricultural Adjustment Act of May 12, which was even officially referred to as Emergency Relief *and Inflation* Act. We are not going to waste space on an otiose discussion about whether the course actually followed during the period deserves to be called inflationary or not, and if so, in what sense. Although there cannot be any doubt that the interests, the exponents of which swapped votes in order to insure the passage of that act, aimed at inflation in every conceivable sense of the term, the act itself was the result of a compromise that yielded less ground to them than it seemed to yield and than, from a wide variety of motives, almost everyone pretended to believe. Its provisions, besides being only enabling and not mandatory, offered plenty of opportunity, subsequently extended,[1] to defeat any kind of inflation at will, and effective use was made of it up to 1937. It was clear enough, however, that at

[1] Section 46 of the act, amending Sec. 19 of the Federal Reserve Act, gave power to the Federal Reserve Board to change the amount of reserve balances which members are required to keep against deposits. The Banking Act of 1933 prohibits members to act as agents for corporations and individuals in making loans on securities (loans on account of others). The Securities Exchange Act of June 6, 1934, gives the Board of Governors power to prescribe margins for brokers' loans to their customers and for security loans by banks. The Gold Reserve Act of Jan. 30, 1934, has been so constructed as partly to eliminate the "inflationary" effect of devaluation. The Treasury's braking power, already great, has then been strengthened by the Social Security legislation which gives it control over vast funds that may be used for the purpose. These are only some of the brakes built into the machinery. To be sure, there are limits to their effects, and most of them must be put into operation by visible and unpopular action. They therefore do not do away with the possibility of inflation in every sense of the term. But it should be obvious how risky numerical predictions about the future behavior of the price level must be.

least devaluation would be unavoidable. Even so, the dollar manifested its natural strength by the hesitancy with which it fell. Therefore, when in the autumn recovery dimmed and NRA and AAA enthusiasms cooled, when, moreover, the announcement by the Reconstruction Finance Corporation of its willingness to lend to banks up to a billion for the purpose of relending failed, as it naturally would, to produce results, the administration encountered the consequent inflationist onslaught by resorting in October to a method which would bring down the dollar *without* "inflation," *viz.*, the gold-buying policy,[1] and by speedily investing the political capital thus gained in putting a stop, for the time being at least, to this type of "experiment" by the Gold Reserve (Devaluation) Act.[2] And still the dollar resisted: a torrent of gold turned toward this country. We will but glance at the movements in its gold stock during the February following upon the presidential proclamation of Jan. 31, which raised the price of the fine ounce from $20.67 to $35 and the value of the monetary gold stock—including gold previously acquired by the Reconstruction Finance Corporation and the Treasury, but excluding coin still reported as in circulation—to 7.03 billions. No less than 381 millions—a record—were imported during the month (213 of which from England) chiefly in response to the new price, banks at home and abroad taking advantage of the undervaluation of the dollar. There was also some release (8.6 millions) from earmark.

In order to appraise the effects of this policy on the economic process, it is first of all necessary to realize how much or how little it had to do with easy money. There is no doubt, of course, that the influx of gold, which

[1] Inflation of the German type would, of course, automatically send down the dollar. It was to association with such inflation (though not necessarily with exactly that dose of it) that part of the support of the policy of depreciation and devaluation was due. What this group of "inflationists" overlooked was the possibility of having the token without the substance. Although facilitating future inflation, reduction of the gold value of the dollar by the gold-buying policy—direct action on exchanges by offering unlimited amounts of dollar balances would have been a still more effective method—was really (whatever the intention) a means of avoiding it. Its tactical virtue consisted in the fact that, in spite of being a device to avoid inflation, it would satisfy certain inflationary interests, *e.g.*, exporters and speculators, who were particularly vocal and supplied the motive power of much of the inflationary propaganda. Hence, it would break the inflationary phalanx.

[2] It will be observed that our interpretation runs in terms of tactics and interests rather than in terms of "theories" and "experiments," and severely disregards phraseology. This, so it seems to the writer, is as it should be if grasp of situations and not phraseology be our aim. Nothing is implied about actual motivation. But that interpretation has until 1937 been quite consistently borne out by facts. Although inflationary phrases, "theories," and ends were freely made to serve tactical purposes later on, in each case pressure *on* the administration was more obvious than pressure *by* the administration. The incessant, though mistaken, appeals to banks to lend freely acquire their significance in this light. For utilization of existing facilities would draw the ground from under the feet of advocates of "currency inflation."

already in February 1934 carried excess reserves of all member banks to the new peak of above 1 billion, was then and later the chief factor responsible for what, at least from the spring of 1935 on, will strike us as abnormally low rates. With government expenditure what it was and reviving business, for example prime bankers' acceptances (90 days) could hardly have reached ⅛ of 1 per cent by November 1934 and stayed there, nor prime commercial paper ¾ to 1 per cent by June and fallen to ¾ after that. But if such lows were beyond expectation from our model, prevalence of very low rates was not, and it is not very obvious that, if, for instance, New York City customers' rates steadily fell from their modest "panic peak" of 4.88 for March 1933, to 2.64 for March 1935, this was substantially more than we should have expected to find without the gold movements induced by devaluation. In other words, the latter did not *create* the conditions of monetary ease. The commercial paper rate was down to 2 per cent by the autumn of 1931 and, in spite of the subsequent rise, to less than that by the autumn of 1932, and there is nothing in the processes of incipient recovery to enforce an upturn. As far as this goes, devaluation did not lift any weight from the economic process, as is indeed obvious from the behavior above described of the dollar in 1933. Moreover, such pressure on rates as there was during that year was due not only to the depreciation but also to the open-market purchases of the Federal reserve banks, which in response to the greenback threat contained in the Inflation Act acquired 570 millions of governments from May to November and then stopped because this only served to swell excess reserves. But that step would have been possible without going off gold. Its ineffectiveness finally—a last verification of our views on the subject—goes far toward establishing the proposition that, whatever influence on rates and credit facilities was exerted by whatever external factor, the influence of these on the economic process was next to nothing.

Devaluation must, in the second place, be considered in relation to the policy of public expenditure. It has, in fact, been held that the meaning of the former primarily consists in its implementing the latter, which was what really produced results. There is, of course, some truth in this view, which is at any rate much superior to the naïve belief that redefining the gold content of the dollar would per se change the price level in the same proportion—a curious survival from the days of the commodity theory of money. For although increase in price level neither is, as a matter of principle, nor has been, as a matter of fact in this instance, the main effect of antidepression public expenditure, it is true that devaluation can, with the qualification to be mentioned presently, only act on prices if and when it either induces or facilitates increase in expenditure. Therefore, if public expenditure that would not otherwise have been

technically possible had been made so by devaluation, we should have to list the latter among the major factors influencing the recovery process. But public expenditure perfectly adequate to produce the results that actually were produced would have been possible with the dollar at the old gold par. Devaluation may have facilitated it by removing all concern about monetary limitations, but this is all.

There remain, in the third place, direct effects. We will mention two. The year 1933 was one of monetary disorder and of widespread apprehensions about impending inflation. An impulse was thereby given to speculation in securities and commodities, which was very obvious on stock and produce exchanges. Stock prices (and prices of second-class bonds), in particular, reacted visibly and until September consistently to every drop of the international value of the dollar. The only question is how far this effect extended beyond speculation in a wide sense of the term. We have seen that the response of productive business to monetary policy is, to say the least, equivocal. The notable instances of 1896 and 1878 should suffice to show that anticipation of monetary expansion is not necessarily a propelling, and anticipation of "sound" money not necessarily a depressing influence. Nor is this at all astonishing. Hence, although the anticipations induced by going off gold certainly contributed to the hectic rise of the wholesale price index —which, as has been emphasized by Mr. Snyder, reflects speculative movements so disconcertingly well—which occurred from March to July 1933, and although this spurt in turn no doubt had *some* effect on productive operations, we shall not weight that component very highly, especially in view of the fact that, as pointed out before, strong revival would in any case be understandable without it.

The other immediate effect of depreciation and devaluation is on foreign trade. The changes during our period in raw figures of either values or quantities—which are not impressive—do not in themselves prove much. As to export of United States merchandise, they are compatible with the opinion that the motorcar and machinery industries benefited somewhat. Since, however, industrial exports are in any case not important enough to matter greatly, we need not enter into the nice questions surrounding any effort to isolate the influence of devaluation. The official index of quantity of agricultural products exported continued its downward course throughout the period, the annual figure for 1935 being a little less than 58 per cent of that for 1932. Some benefit to wheat and especially to cotton farming is, nevertheless, beyond doubt. In the latter case it also served to counteract the effect of the depreciation of the rupee, the Egyptian pound, and the milreis. However, this instance only strengthens the case for the broad proposition that, with qualifications which need not be repeated, public spending was the only

positively propelling measure acting on our process—as distinguished from the measures previously discussed, which mainly removed obstacles and thus (again, mainly[1]) helped in what may be termed a *negative* way.

5. Prima-facie federal income-generating expenditure actually was from about December 1933 to about the middle of 1937 the dominant factor in the increase of net national income (current dollars[2]).

We will not go into the methods and agencies by which the spending program was put into effect and which, along with the immediate objects of the spending activity, were in an incessant process of change from the time that foundations were laid by the Unemployment Relief Act of Mar. 31, 1933 (forestation, prevention of soil erosion, plant disease, and so on), the Emergency Relief Act of May 12, 1933 (revision of powers of the Reconstruction Finance Corporation, creation of the Federal Relief Administration, grants to states for the purpose of direct unemployment relief) and titles II and III of the National Recovery Act of June 16 (Public Works Program, grants to states for highway construction, appropriation of 3.3 billions). Methods and objects are not indifferent either for the recovery or any other aspect. Even for the immediate effect on the economic process it is by no means indifferent whether a given sum be spent on direct relief or on purchase, from stock, of materials the proceeds of which are used by recipients for repaying debts: there is, according to the way of spending, a continuous variety of effects which range from increasing system expenditure by several times the amount spent down to not much more than refinancing.[3] Nevertheless, we will

[1] Some, especially AAA, also added to total expenditure in the system and as far as they did, now come in again by virtue of this title. In a small way, of course, all of them did so, owing to the administrative expenditure involved.

[2] See Professor Kuznets' National Income, p. 8, Table 1, Col. 3. The figures for net federal income-increasing expenditure are again Mr. Gayer's (*op. cit.*). It should be added that Mr. Currie's method, on which they are based, includes also receipts from estate taxes, on the ground that under the circumstances estates, even when able to pay those taxes from owned cash and "near-cash," would do so from idle funds, which were thereby put into circulation. It will be seen that income-increasing expenditure greatly differs from the deficit as officially figured. All expenditure incident to refinancing transactions is excluded, while income-generating expenditure of nominally independent agencies (trust funds and so on) is included. Correction for variations in the income-generating expenditure of states and local bodies would not make a significant difference.

[3] Another point may be mentioned here. There is a type of public works which amounts to little more than direct relief. But on the other end of the scale there is a type which, even if undertaken from the relief motive, is nothing but a businesslike reaction of public bodies to the prices of factors and the rates of interest which obtain in a period of depression or incipient recovery. Strictly, expenditure of this character should be excluded from an estimate of remedial expenditure, because it is not an external factor acting on the process but an element of the latter's normal or autonomous mechanism. As state enterprise expands, this must become increasingly important, but it is so even with many expenditures which do not issue in monetary returns at all or in returns which are com-

merely note that net national income increased by about 8.6 billions in 1934 and by about 5.2 billions in 1935 (and by 8.8[1] billions in 1936), which compares with federal net income-generating expenditure of 1,856 millions for 1933, of 3,238 millions in 1934, and of 3,154 millions in 1935 (and 4,025 millions in 1936).

As measured by those and other figures—for instance, of employment (see below)—effects may well seem surprisingly small. They have, in fact, been felt to be so even by those economists who simply attribute the whole of the observed increase in national income to federal income generation. But obviously we cannot do this, for to hold that income generation alone has been responsible for that increase involves either circular reasoning or else the theory that in the absence of it the economic process would have gone on shrinking or would have dragged along indefinitely at the minimum level.[2] There is no warrant for believing this. On the contrary, there is, as we have seen, reason to believe that there would have been recovery in any case—a recovery strong enough to produce by itself most of the increases, especially in output, that actually occurred and more. It follows that by taking account of the cyclical phases on which federal income generation impinged, our expectations as to its effects can be only raised and not lowered. We will restate these expectations under four heads.

First, government expenditure will improve *any* business situation, even if it increase the national income of the year only by the amount spent or by less than that or even, in a limiting case, by nothing at all, through helping the public to build up depleted balances and to repay debts. If firms repay bank loans by means of money which the spending government raised from existing but idle deposits, improvement may even be accompanied by a decline in total or total demand deposits which, as we have seen before, may thus be a favorable symptom.[3] As a rule,

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mercially adequate: public works using means of production that would otherwise go to waste may be said to have been carried out at no social cost whatever.

[1] Professor Kuznets' figures end with 1935. Hence, the figure for 1936, taken from the Department of Commerce series, is not strictly comparable with the preceding ones.

[2] An assumption of this kind underlies the reasoning of Professors Colm and Lehmann in their otherwise excellent study of Public Spending and Recovery in the United States, *Social Research*, May 1936. Dr. Currie (paper read at the meeting of the American Economic Association, Dec. 30, 1937) argues that business deposits increased strongly from 1933 to 1935, while business borrowing declined, that this increase can only have been due to the net income-increasing disbursements by government, and that *hence* public spending must have been the initiating force of recovery. This is a clear *non sequitur*, unless we make recovery synonymous with increase in deposits and assume quite gratuitously that the decline in borrowing was completely independent of those disbursments. See the concluding paragraphs of this subsection.

[3] Of course, that symptom is in this country not visible in any deposit series. The behavior of loans, however, suggests that this component was not entirely absent.

only a moderate amount of unfreezing is left for the early stages of the recovery phase. But owing to the extent of the preceding catastrophe and of the continuing state of overindebtedness, it is reasonable to assume that in this case "consolidation" was one of the major remedial effects of the spending policy.[1] Though acting in the monetary sphere, it would, however, primarily show outside of it.

Second, there were what we will call the *direct* results of handling the government's money as far as it was not absorbed by the replenishing of balances and the repayment of debts: the unemployed man spending his dole, the man who has been reemployed in order to fill a government order spending his wages, at the retailer's shop, the retailer thereupon placing additional orders, and so on. Separate evaluation of this effect, which was no doubt considerable, is impossible in the present state of our information, since among other things we do not know the value of that income efficiency of money (Chap. XI, Sec. A) by which the relevant part of government-created income would have to be multiplied.[2]

Third, firms —particularly in recovery—will react not only directly to government orders or to purchases by the first recipients of government funds but also *indirectly* by expanding operations in anticipation of those orders or purchases and by otherwise "magnifying" the immediate effects of government disbursements. It should be observed, however, that under the conditions prevailing in the early stages of recovery new investment cannot be expected to be much in evidence. If in this instance it had been, this would before 1935 have introduced an entirely abnormal feature. This is not, of course, to deny that stimulation of investment is entitled to a prominent place in a general theory of governmental income generation. In and after 1935 some such stimulation may have been present. In depression and recovery, however, it is

[1] If we call that effect *remedial*—and the same term could be applied to the effects to be noticed under the remaining heads—we do not thereby "justify" the spending policy. A drug may be "remedial" with respect to headache but "injurious" to the heart. The writer entertains no doubt but that public income generation outside of "deep" depression (roughly from the middle of 1930 to the middle of 1931) impairs the efficiency of the capitalist process for reasons that should be familiar by now. They apply especially to public income generation during the later stages of recovery and the first stages of prosperity. The difference in the effects of public and entrepreneurial expenditure, the latter involving, the former not involving, change in production functions, should particularly be borne in mind.

[2] We might, of course, figure out average income "velocity," *i.e.*, efficiency times rate of spending, in the usual way by dividing total income by deposits plus money in hand-to-hand circulation. But it will be seen on reflection that we cannot arrive at the effect of federal income-generating expenditure by multiplying the result into the amount of that expenditure. Doing this would precisely involve the circular reasoning adverted to above. It is not held that the problem is insoluble, but its solution involves a formidable research program.

current operations in and near the consumers' sphere that need to be and, as a matter of fact, have been stimulated.

Fourth, irrespectively of reactions of the type noticed under the preceding heading, there will be *ulterior* effects on economic activity. The relief in the debt structure, the steadying of prices, the improvement in the sectors immediately affected by government disbursements, the general feeling that a floor is being provided will remove inhibitions and invite advance all round. This class of effects should have been particularly strong in a situation in which not only the stage was set for recovery but in which a recovery that had already begun had been interrupted by an experience so trying to business nerves as an epidemic among banks. While there is thus no intention on the part of the writer to deny the reality of these effects, protest must be entered against the practice of some economists in making an uncritical use of them, which amounts to begging the question.

It should be added that federal income generation must also have given an impulse to consumers' credit by making, directly and indirectly, many households "credit worthy" which had previously ceased to be so. 1934, in fact, displays much higher figures than 1933 for the credits outstanding of intermediary and cash-lending agencies and also for the receivables of retail merchants. This was much facilitated by the fact that this type of financing afforded at that time the most obvious chance for banks to respond to the incessant appeals to "liberalize" lending. Since the above analysis applies, with but little modification, to income generation by consumers' credit as well as to income generation by government expenditure, it is easy to realize that the former reinforced the effects of the latter.

This analysis evidently harbors no tendency to underrate the potentialities of pump priming which, as has been pointed out before and as the war experience shows, may even if sufficiently persisted in turn depression into a state displaying all surface characteristics of prosperity. It will be observed that in some points we do not share the disappointment felt alike by advocates of governmental income generation and by its opponents. We were not, for instance, disappointed on the ground that private investment was not more strongly stimulated in 1934. Nor did we consider that application of government-created funds to the replenishing of balances and to the repayment of debt constituted *pro tanto* defeat of the spending policy. Observed results were, nevertheless, no better than they could have been expected to be had that policy been the only component to act. Since we are not at liberty to disregard the other component, which also was adequate to produce those results, we are driven to the conclusion—to be verified in the next section—that other factors weakened the combined effects of both.

Since so many economists accept the quantitative adequacy of the injection of purchasing power to produce observed results as an *ipso facto* proof that there cannot have been any contribution from the economic process itself—or that there was a negative one—it will be well to retrace our steps, in order to state explicitly the case for alternative possibilities. One has been noticed under our first heading: that part of net income-generating expenditure which increased national income only by its own amount or less will, as long as we do not know its amount, obviously be credited with more than its share if expansion unconnected with it should occur at the same time—financed, let us say, from existing deposits—and if, on the strength of a plausible quantitative relation between total income-generating expenditure and total increase in national income, the one be connected with the other. The state of overindebtedness, on the one hand, and the cyclical phase on the other, combine to make it a practical certainty that this coincidence was of some importance in shaping the statistical picture.

Again, if government funds swell business deposits, as of course they did, they will then finance the subsequent transactions of the recipient firms, whether those transactions are induced by the act of expenditure or not. It does not follow that every expansion of operations by these firms must, therefore, be causally related to those receipts and that without them they would not have expanded operations at all. In this case it is indeed still more obvious than it is in the other how government expenditure propelled recovery. But since resumption or expansion is, for that cyclical juncture, independently motivated, it will not do to attribute all that was financed by money originally inserted by government disbursements to the impulse imparted by them: it cannot be inferred that government carried business as Aeneas carried Anchises. To some extent at least, financing by receipts simply replaced financing by borrowing. As we shall see, there is ample evidence for this.

It should not be replied that this is a case of speculation about possibilities *vs.* hard statistical fact. It is a case of common sense *vs.* a type of monetary theories. What we *see* is the income-generating expenditure and certain developments. The relation between them we do not see. Our interpretation of it is not more but less hypothetical or speculative than the one which exclusively relies on mechanical relations between the two, because it assumes and asserts much less.

Finally, it should be observed that no account has been taken of the possibility that government spending might have interfered with business expansion (excepting, of course, the expansion of bank loans). Some of the arguments adduced for this possibility fully merit the shrugging of shoulders with which they are usually met, for instance the argument that the unbalanced budget destroyed confidence. Others do not.

But the net effect of the spending policy, *taken by itself and considered only with reference to the general complexion of short-run business situations*, seems to the writer to have been so clearly positive as to justify him in disregarding, for the purpose in hand, any possibilities of that kind.[1]

6. We will now glance at the statistical picture. It should be recalled that we need not lean too much on "inflationary" anticipations or on speculation in general when explaining the boom of 1933, which culminated in July. Nor need we call it simply an affair of restocking (inventory boom). Though all these and other factors—such as attempts to profit from purchases or production not yet burdened by the extra costs that were to be expected from AAA and NRA—no doubt materially helped, that boom is fundamentally understandable as a belated and hence more violent reaction to the ravages of the spiral, the intensity of which it may reasonably be said to measure. Nor is it necessary to emphasize the element of reaction to excess which undoubtedly intensified the sharp slump—it was sharper than almost any that had preceded—in the third, and the almost level movements of the fourth quarter: a relapse was quite within ordinary regularity (Kitchin depression). But public spending no doubt shortened the relapse and accentuated the upswing—which came in December—as well as the strong expansion in the first half of 1934. There was but moderate relaxation in the third quarter of 1934, and expansion resumed in the fourth quarter. It went on at a much increased rate in the first quarter of 1935. Outside debits (141 cities; Federal Reserve Board) express the fundamental contour very well from month to month. For the years in question, monthly averages (which were at a maximum of 27.66 billions in 1929; at 23 billions for 1930; at 12.87 billions in 1932) struck their low point of 12.2 billions in 1933 (as we know, mainly in consequence of the banking troubles) and rose to but 13.83 billions for 1934 (to 15.85 billions for 1935). In the absence of government income generation we should have called this conforming to expectation. As it was, the smallness of the increase becomes a problem. Our solution of this problem is indicated in the preceding paragraphs.

Profits fell from the fourth quarter of 1932 to the first quarter of 1933, if allowance be made for seasonal behavior,[2] and recovered strongly in the second quarter, but less than uncorrected figures suggest. Then they relapsed again but made a showing much beyond expectation

[1] *Cf.*, however, the last footnote but one. Neither NRA codes nor showers of money are calculated to vitalize the capitalist process.

[2] *Cf.* W. L. Crum, The Course of Corporation Profits, *Review of Economic Statistics*, Mar. 15, 1934. The writer would, more positively than Professor Crum, assert that the true low point of corporation profits comes in the second quarter in 1932. Improvement for the greater part of the second half of that year is, in any case, beyond question, at least as far as Professor Crum's selected list of 163 corporations is representative.

from our model in 1934, the quarterly average for that year (Federal Reserve Bank of New York) being about 75 per cent above that of 1933—roughly speaking, the writer would attribute three-quarters of this increase to government spending and the NRA.[1] Stock prices copy this contour fairly closely. It should not be forgotten, however, that they merely continued the upswing of the third quarter of 1932. The monthly average of new corporate capital issues (domestic; *Financial and Commercial Chronicle;* maximum 1929: 666.8 millions) touched its low of 13.8 millions in 1933 and increased to but 14.8 millions in 1934. This is even less than we should have expected on the strength of the proposition that recovery does not typically or necessarily start from real investment and still less from capital issues. Government disbursements in part supplied the funds which it would otherwise have been necessary to raise by issues or to borrow from banks. Also, the proceeds of the issues of 1929 were still largely unused.

Some idea of the extent to which government disbursements replaced bank credit by enabling firms to finance from receipts can be gathered from the behavior of All Other Loans of reporting member banks. Those loans did not increase, as we have seen, in the incipient recovery of 1932—which conforms to expectation—but went on falling and ended their downward course by a sharp drop in the first quarter of 1933. Then they did rise moderately until the beginning of the fourth quarter, when they decreased again. So far there was nothing abnormal. But they did not at all participate in the upswing of the first half of 1934, while United States securities held increased by about 1 billion in the first quarter and by another half toward the end of the second. Increase in the third was weak and short-lived and more than compensated by the fall to the end of the year, and no increase accompanied the strong upswing of the first quarter of 1935: firms did not go to banks for what they got from government. It will be recalled that we observed the same phenomenon in Germany.

Outside net demand deposits had increased during the second half of 1932. After the understandable slump of the following spring—which brought them to a low that is spurious in our sense—they increased more than All Other Loans to July 1933, mainly, of course, because of the increase in members' investment incident to federal reserve banks' open-market purchases. Their rate of turnover also increased at the same time. Then they fell and rose along with outside debits until the middle of 1934, investment again taking the place of loans in creating them. But they continued to increase after that, in response

[1] Monthly averages of cash dividends (*The New York Times*; maximum 1930. $386.5 million; banks excluded) were 216.5 millions in 1932, 181.5 millions in 1933, 206 millions in 1934 (and 226.3 millions for 1935).

to investment that did *not* take the place of loans which would otherwise have emerged, until the end of the period: government by selling deficiency bills—the cash deficit of 1934 in the sense of the Daily Statements was over 4.5 billions—acquired deposits which, when used, produced other deposits: the old method of war finance. Transfer of surplus funds to centers and influx of gold—at the new par—of course, also swelled net demand deposits.[1] There is no problem in any of these movements or in the growth of excess reserves.

We have noticed how interest rates behaved under the monetary regime that obtained, and will only add that bond yields (corporate issues; the combined index of Standard Statistics) fell[2] (monthly average) from 6.27 per cent in 1932 to 5.92 per cent in 1933 and 4.86 per cent in 1934, and were 4.78 per cent for March 1935. The B.L.S. index of wholesale prices, excluding foods and farm products, rose from its minimum of 65.3 in April 1933, to not more than a monthly average of 78.4 for 1934[3] (75 for 1931), the greater part of the rise occurring before 1933 was out, *i.e.*, before the spending program had had time to produce its full mechanical effects. This is within the limits of what might have been expected as the result of a rebound from panic lows. Besides the presence of underutilized resources, the weight of incessantly increased productive efficiency is mainly responsible for the failure of prices to respond more strongly to the price-raising policy[4] of the administration. The latter was more "successful" with respect to the prices of foods and farm products. Prices received by farmers increased by 84 per cent (index of U. S. Department of Agriculture) between March 1933 and December 1934. The B.L.S. index for farm products rose, however, from 40.9 for February 1933, to 78.3 at the end of our period, *viz.*, for March 1935, *i.e.*, by over 91 per cent of its minimum. But the reader will realize that it would be easy to choose dates in such a way as to get almost exact correspondence between that increase and the decrease in the gold content of the dollar—he will also realize how perfectly meaningless that would be.

[1] Through August 23, 1935, the term *net demand deposits* retains its old meaning. Total deposits of reporting member banks increased by about 8 billions during the year.

[2] Along with a fall in stock prices, bond yields increased somewhat in the third quarter of 1934, while there was a temporary outflow of gold. This was a not unnatural concomitant of deficit financiering, but on the whole such effects were successfully avoided. However, bond yields were not low enough obviously to negative the idea of the presence of distrust in the currency. The fact that really cheap rates were confined to the open market (in our sense) does point in that direction.

[3] The Fairchild retail price index, which also excludes foods (December 1930 = 100) and also has a minimum (69.4) for April 1933, rose to a monthly average of 88.3 for 1934.

[4] Prices in full-weight dollars fell until November 1933 and did not really start to rise until May 1934. But there is no need of going into the various aspects of this.

Average hourly money wage rates behaved very differently in different sectors—in anthracite coal mining they increased very little, in bituminous coal very much, for instance, which again illustrates the lack of realism incident to speaking of a wage level. On the whole, however, these different rates of increase seem to have worked in the direction of a more balanced wage structure. For manufacturing industries as a whole ("all wage earners": 25 industries) an increase of over 22 per cent occurred between June (the minimum) and December 1933. After that there was no relapse—though there was one in the wages paid by the wholesale and retail trade—but an increase at a much slower rate, which was, nevertheless, sufficient to produce an increase in real rates of about 6 per cent by March 1935. The annual average of the hourly rates of skilled and semiskilled labor in manufacturing industries (National Industrial Conference Board) was 55 cents for 1933 and a little over 64 in 1934.[1] This is clearly contrary to expectation from our model. Excepting, perhaps, a fraction of the increase in 1933 which might have resulted in any case from the general reaction to panic lows, it must be attributed to government policies which are the only available factors to explain how the upward shift of the demand "curve" for labor could have produced such rates in spite of the prevailing unemployment. No comments about consequences need be added to what has been said on the subject before (see especially above, sub 3).

Both factory pay rolls and employment started on their upward course before monetary wage rates. In fact, it is important to recall that they began to increase in the third quarter of 1932 and that the increase which occurred from March to September 1933 was but a continuation and not a break. Monthly averages (combined index of the Department of Labor) of factory pay rolls were for 1933 about 6 per cent above 1932, for 1934 nearly 21 per cent above 1933, and for 1935 a little over 13 per cent above 1934, while the corresponding increases in employment averages were 10, 13, and a little over 4 per cent, the latter figure being suggestive of inhibitions. Particulars of incidence of unemployment or reemployment were as we should expect and need not be discussed here.

Output of manufacturing and mining, as measured by the Federal Reserve Board's index and as reflected in production of electric power—which, even if corrected for "trend," increased by 19 per cent from March to July—and in carloadings, also behaved according to expectation from our model modified by the political factor. Building contracts, for example, were, of course, affected by the public works program and would

[1] Per capita weekly earnings in manufacturing began to rise earlier—already in the spring—and then increased with fluctuations to the third quarter of 1936. Of course, they also increased in real terms, hours worked per week rising somewhat above their 1932 minimum of 34.8.

not otherwise have increased much in 1933—private building was indeed below expectation, if anything. The sharp increase in steel-ingot production in the second quarter of 1933 was from a very low level, but even so surprisingly great—over 300 per cent in 4 months, thereby reaching the 1923 to 1925 average—so that the subsequent reaction of over 50 per cent was very understandable. Neither its rise nor its fall, however, meant what they used to mean of old, when steel satisfactorily represented equipment. But it should be observed that from any reserve capacity which may have existed in 1929 and which was obviously greatly increased by the shrinkage of the subsequent years, a substantial deduction must be made on the score of wear and tear—some of it independent of degree of utilization—and of obsolescence.

Although machine tool orders rose to a fairly high level at the end of the period, steel output was, during 1933 and 1934, primarily associated with durable consumers' goods. Output of automobiles nearly reached 3 million units (passenger cars and trucks) in 1934.[1] Refrigerators, air-conditioning installations,[2] and other members of the class of "depressionless industries," such as gasoline, cigarettes, rayon, and some chemicals, showed considerable gains.

In the behavior of output three points must be noticed. First, short fluctuations do not quite correspond to our idea of what they should have been. The increase of 66 per cent from March to July 1933, which carried it to the 1923 to 1925 average and the subsequent decline are at least *timed* according to expectation. But the increase in the first half of 1934 came 6 months earlier than we should have expected—relapse in fact followed—and for the decline and stagnation in the first half of 1935 we have only political influences (?) to offer. Second, the index did not, even before the decline early in 1935 and excepting the 1933 peak, reach the level of 1925–1926, the preceding neighborhood of equilibrium, while it should have surpassed it. We attribute this to the severity of the depression and may recall that the recovery after 1873 also was not satisfactory in every way. Nevertheless, effects of the NRA policy may be partly responsible. Third, we must supplement the case for an adverse effect of the increase in wage rates on employment by noting the striking difference between the latter and the corresponding output. To that 66 per cent increase in output corresponds an increase of only 33 per cent in factory employment. This is in part due to underutilization of the working force employed around the bottom of the depression—average

[1] This was not simply "rebound." Much had changed in the industry during depression years, and part of that increase must be attributed to its own impulse. There is a kernel of truth in the exaggeration that "motors led us out of depression."

[2] The latter, however, were not significant quantitatively. They are more properly considered as an innovation of the following Juglar.

hours worked per week, which may be taken as an indicator, in fact, increased by nearly 5 per cent from 1932 to 1933—and in part simply the consequence of labor-saving rationalization which had been going on through the depression. But it is impossible to overlook the premium that the wage policy set on this rationalization.[1]

To sum up: The reader will have no difficulty in listing the symptoms by which the effects of governmental income generation unmistakably show. In spite of them, however, the statistical picture presented does not differ fundamentally from what we should have expected to see in the absence of that factor. Since, as has been pointed out in 5, it would have been possible for such a picture to emerge, public expenditure notwithstanding, under the sole influence of the normal recovery process, the conclusion seems to suggest itself that—barring minor deviations caused by it, such as we observed in the behavior of deposits—that expenditure took no effect. This conclusion we do not draw. If we did, we should, in fact, be committing the very same error which those economists commit who simply attribute to government spending everything that happened. But we do draw two other conclusions: first, that attributing all observed developments to the normal recovery process would, though wrong, not be more so—or more "speculative"—than the opposite opinion; and that the prima-facie impression with which we started in 5 is misleading.

G. The Disappointing Juglar.—If past experience be a guide and our schema a roughly correct expression of it, then the rise of a new Juglar—the fifth of the Kondratieff—was due for the spring of 1935, however little meaning we may attach to the precise date yielded by our experimental count (beginning of April). Though, as the reader knows and as we shall presently see, facts did not entirely fail, for a time just about equal to the duration of an average Juglar prosperity, to bear out the expectation which would follow from that, the difference is great indeed

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CHANGES IN HOURS, EARNINGS, PRODUCTION, AND PRICES, MANUFACTURING INDUSTRIES, BY MONTHS 1932–1935
(Source *Monthly Labor Review*)

Year, monthly average	Index of total man-hours	Index of average hourly earnings	Index of production	Index of average output per man-hour	Index of labor cost per unit of output	Wholesale prices for all commodities other than farm products
1932	100 0	100 0	100 0	100 0	100 0	100 0
1933	107 3	98 1	119 0	111 0	88 0	101 0
1934	114 4	116 0	124 0	108 0	108 0	112 6
1935	126 2	120 1	143.0	113 0	107.0	117.4

between such upswing as there was and what happened in the last comparable instance, 1879–1880. Conditions external to this country which then produced an agricultural boom may no doubt be invoked in partial explanation. But government policy largely did for agriculture now what European demand had done for it then, and if we take account of government expenditure in general, agrarian and other, the picture becomes still more disappointing. This was, in fact, universally felt. People never spoke of more than recovery and an unsatisfactory one at that. It would not, however, help us much if we did the same; for the real trouble with expectation from our model is not in the weakness of that "prosperity" but in the fact that it was followed, instead of by a recession in our sense, by a break which landed the system, within a few months and at a rate surpassing everything witnessed during the years from 1930 to 1932, in a state displaying all the phenomena of deep depression. This would be still more unexpected—from the standpoint of our model as such—as a sequel to a recovery than it is as a sequel to a prosperity phase. Does it mean that the capitalist process has spent its force, that private investment opportunity has vanished to the point of making it dependent on government expenditure for motive power or in such a way that the system must collapse as soon as government expenditure is withdrawn, like one of those children's balloons that shrivel as soon as one ceases to blow air into them?

Reasons for believing that this is unlikely have been offered in the introduction to the preceding section. But there seems to be evidence for it of an almost experimental nature. The figures of federal income-generating expenditure for 1935 and 1936 have been mentioned.[1] Again it was, prima facie, quite sufficient to justify the statement that it induced, directly and indirectly, such—this time—prosperity as there was during those two years, and if we take into account deferred effects, also during the first half of 1937. Though there were developments that seem to be beyond the range of its consequences, it might still be said without absurdity that the spending policy then "took effect at last." After that it was discontinued. On cash account the Treasury got out of the red.[2] A slump ensued in due course. Moreover, the writer entertains no doubt not only that that slump will give way to recovery as the new spending program within the 4 billion deficit budgeted for 1938

[1] The veterans' cash bonus of 1,900 millions became payable from June 15, 1936. Half of it enters into Mr. Currie's figures, being distributed, as seems reasonable, over the month of payment, the two months preceding, and the three months following. The writer would have distributed the whole of it in some such way. As a matter of fact, about 1,200 millions were promptly cashed, and chain- and department-store sales responded immediately.

[2] The figure of income-generating expenditure for 1937, $900 million, must be interpreted with due regard to the fact that this sum was almost entirely spent in the first seven months of the year.

unfolds during the fall of 1938, but also that tapering off will again be attended by the symptoms of—according to the way in which it is effected—recession or depression.[1] This should make us both envious and thankful: envious because fellow economists will be able to enjoy so delightful a verification of their views, thankful because in other fields —medicine, for instance—people do not reason like that, or else we should all of us be morphinists by now.

1. In order to see more precisely what there is to explain, we will begin by a survey of time-series contours. 1935 was the third year to show almost consistently higher levels of annual figures than its predecessor. Monthly figures, however, were not consistently higher. The weekly operating rate of the steel industry may serve as an example. Excepting the first two months, it was at or below the 1934 level until nearly the end of June; only in the second half of the year did it rise above that. By end of September it was 50 per cent—in itself sufficient proof of the weakness of that upswing, though 90 per cent was eventually reached (March–April 1937). Moreover, there were other irregularities, among them two setbacks in which leading series behaved in a somewhat discordant manner: during the first half of the year it was the index of production of manufactures and minerals and allied indices, such as carloadings, that sagged, while outside debits steadily increased;[2] the little relapse in the autumn shows primarily in outside debits, while production was hardly affected at all. These relapses and discordances were—though on a very small scale—repeated in 1936,[3] which otherwise

[1] That sentence has been left standing as it was written in July or August 1938. It may be useful to add the following comments (May 1939).

Marked improvement in fact showed in the third and fourth quarters of 1938, especially in the indices of manufacturing output, construction, carloadings, department-store sales, employment, though, conforming to expectation, prices continued to decline. These facts obviously bear out the first part of the statement in our text.

But the relapse during the first quarter of 1939, which continued during April, does not illustrate the second part. There was indeed, a considerable increase in Treasury deposits during February, due to the sale of savings bonds and of securities issued on behalf of various public credit agencies, which for a few weeks raised government cash receipts above government disbursements. This, however, was hardly adequate to produce the observed results, and beyond this there was nothing but talk. We are still within the rising tide of spending, and if effects do not show more visibly, this is due, apart from the presence of depressing extrasystematic factors, to the cyclical phase. If the reader refer to our schema he will see that, barring possible reactions to the abnormal slump of 1937–1938, there is little reason to expect from the mechanism of our process any very strong upturn for several years to come.

[2] That in the beginning of the prosperity phase money volume of transactions should increase more than physical output is not in itself an irregularity; but output fell, especially in steel, cotton and silk textiles, and bituminous coal.

[3] But recalling our experimental count we shall not, as we must for 1935, consider the occurrence of those setbacks as abnormal.

is the year of the strongest and most nearly uninterrupted increase all round. At its end the 1929 peak of the Federal Reserve Board's index of production of manufacturing and mining was almost reached (with 120 per cent of the 1923 to 1925 average; from May 1935 to May 1936 the index increased by 16 points, and the value in current dollars of national income produced (63.8 billions) was almost 80 per cent of the 1929 figure.[1] Aggregate profits of 700 industrial and mercantile companies (Federal reserve bank of New York), which had in 1935 been about 80 per cent above 1934, further increased by about 50 per cent in 1936, aviation heading the list and steel, automobiles, tires, petroleum, chemicals and drugs, machinery and tools showing up particularly well. Only 6.4 per cent of those companies reported net losses.

As stated above, a Juglar recession *in our sense* was due for 1937 (the middle of August in the experimental count). But what actually happened was very different. After a drop in January, outside debits recovered through May—not, however, to the figure of the preceding December—then hovered on a horizontal level until August—so far conforming to expectation—and after that shrank rapidly. In the first half of 1938 they continued to decline—not merely in function of falling prices—but at a decreasing rate. By June they seemed to have reached an even level. Output of manufacturing and mining behaved irregularly from the first, and more irregularly than debits in the second half of 1937; instead of the increase that we should expect, we find that it declined in January and recovered only to May, after which it fell by about one-third until the middle of 1938,[2] at a rate that decreased from November until a floor was apparently reached in June. Durable goods, especially equipment goods, for which demand temporarily ceased altogether, of course, suffered most.[3]

Profits behaved similarly and, hence, until the last quarter of 1937, conform better to expectation. As far as data of quarterly reporting

[1] Weekly operating rate of steel was at about 70 per cent, or above that, from the middle of April on, about 75 per cent from the middle of September on. It touched 80 in December.

[2] Steel and automobiles kept up well during the first 8 months of 1937, while cotton, wool, leather, and other lines declined already during the first half of the year. Then the iron and steel index dropped by 65 per cent and the automobile index by over 50 per cent within 4 months. Production of electric power, which had increased strongly in 1935 and still more so in 1936, surpassed the latter record until August and then fell precipitously. The operating rate of the steel industry, 90 per cent in March and April 1937 (see above) was down to 25 per cent at the beginning of January 1938. It began to rise at the beginning of June.

[3] Department-store sales, which from the middle of 1935 to the middle of 1936 had risen by about 16 per cent, were well sustained, and even at the end of the year not much below the 1936 peak; rural sales did still better and were higher for the second than for the first half.

concerns allow us to judge, profits were larger by one-half in the first quarter of 1937, and lower by about one-third in the fourth, than they had been in the corresponding quarters of 1936. For the year as a whole they were higher by about 7 per cent.[1] Of the 700 concerns 9.6 per cent reported net loss. Substantial gains on 1936 figures were shown by steel, railroad equipment, machinery, agricultural implements, electrical equipment, oil, metal, and mining including copper and copper products, the automobile industry being among the chief mourners.

Factory employment rose and fell much less than output all along. In the monthly average of 1935 it was but little over 4 per cent above the level of 1934, then increased at a somewhat greater rate in 1936 and reached its maximum, a little over the 1923 to 1925 average, in the second quarter of 1937. From July to December it fell by 14 per cent. But it was still 84 per cent of that average early in 1938 and 79 per cent for April. Subsequent changes in most lines were small, but decreases in the steel, machinery, motorcar, and men's clothing industries still further reduced the index through May. Pay rolls, of course, rose—also to about the 1923 to 1925 average in the first half of 1937—and fell, by 23 per cent from July to December, more than employment. But the rise above and the fall below proportionality reflect not only advances or reductions in rates but also increased or decreased employment in industries paying higher than average wages and decrease or increase of part-time employment, here and there even overtime—but since this was largely due to the reduction in hours, it was but another form of increase in rates—and its elimination.[2]

Money wage rates gained, as we have seen, less in 1935 than they had gained in 1934. Then they scored further gains. Average hourly rates for skilled and semiskilled males in manufacturing (64 cents in 1934) were about 66 cents in 1935 and about 69 cents in 1936. Unskilled males did worse, and women suffered a small loss in reaction to the particularly strong increase which had previously occurred in their case. In 1937 rates were increased by another 10 per cent, reaching a level substantially above that of 1929, while real rates then surpassed the latter more than 25 per cent.[3] Labor cost per unit of product also rose. Again, it

[1] Total national income was $69 billion.

[2] As always, indices of retail sales and of total wage payments moved closely together. For example, for 1929 to 1935 the chart at the bottom of the last page of the Cleveland Trust Company's Business Bulletin for Apr. 15, 1936.

[3] Real rates were, after their rise in 1933, substantially constant during 1934, 1935, and 1936. They rose by about 6 per cent in 1937, as they should in recession. There was further increase in the first half of 1938.

According to the National Industrial Conference Board, Wages, Hours and Employment in the United States, 1914–1936, Table 2, average wage rate of factory hands was about 62 cents in 1936 (working hours per week about 39). This compares with a rate of

follows from previous argument that this must have been a major factor in the industrial situation which it tended to make more sensitive to depressive influences, and a major reason why unemployment, in spite of a substantial decline in 1936—there was even sporadic shortness of labor—remained at a high figure. Besides forcing the pace of labor-saving rationalization, it may in spots even have interfered with expansion of output while prosperity lasted. Construction may serve as an example.

The strong increase in contracts awarded which we observe in the fourth quarter of 1935 was not repeated in 1936, although both total and privately financed construction gained considerably over the year. In 1937 publicly financed construction (a little over 1 billion) declined by over 15 per cent, but privately financed contracts for building and engineering work (about 1.8 billions in the 37 States) showed an increase of almost 40 per cent over 1936, to which public utilities contributed considerably. The index advanced at the end of the year and into January 1938.[1] In February there was a sharp fall in nonresidential construction—though this was partly made up for in March—and privately financed contracts for the quarter were 30 per cent below the first quarter of 1936. But even before the slump, the showing was again, as in the recovery, below what we should expect considering possibilities (see below) and monetary conditions. Building costs, which rose to the 1929 level in 1936—they increased further by nearly 20 per cent in 1937—and the role of wage rates in them obviously supply the explanation. However, it must be emphasized once more that such increase in hourly rates as occurred from the spring of 1935 to the last quarter of 1936 is not only quite within expectation, a rise of money wage rates being a normal element of prosperity,[2] but also that this rise cannot be thought of as a cause of the slump. Not even the total rise from the depression low can, except as an element of a complex pattern (see below, Sec. G, 5, *c*)—here, as always, we must beware of two-variable arguments.

2. Conditions of extreme monetary ease prevailed throughout. Prime commercial paper, for instance, was at ¾ of 1 per cent until March 1937. Then it managed to climb to 1 per cent, but relapsed to the old figure by June 1938. Rates on customers' loans, which on May 31, 1935,

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25 cents in 1914 (working hours per week about 51.5). Monthly average of the board's cost-of-living index (1923 = 100) was 61.3 for 1914 and 82 for 1936, *i.e.*, it increased by about 34 per cent.

[1] This was, however, partly due to the new building code that New York City put into force at the end of January.

[2] It cannot be objected that this is speaking from a model which does not include the possibility of abnormal unemployment in prosperity. It does; for if the labor market be imperfect, unemployment will not prevent a rise in wage rates.

had been 1.83, fell to 1.67, and, after an excursion to 1.71, to 1.63 by May 1938. In spite of the heavy treasury financing, the yield of treasury bonds declined, after a slight rise in the third quarter of 1935, to a little over 2.2—a development which was accompanied by great refunding operations from the beginning of 1935—and the yield of AAA corporate bonds almost without interruption to 4.5 at the end of 1935 and to a little over 3 per cent at the end of 1936. Then there was an increase through April, but decline to new lows in May 1937, mortgage rates keeping again a much higher level all along. This behavior of short rates and yields obviously calls for explanation other than can be gleaned from our model. We cannot even see a trace of the expected effect in the slight increase that occurred late in the upswing, since that resulted from measures of monetary management (see below). But the irregularity should not be exaggerated. We shall see it in its true proportions if we remember the behavior of English rates from 1873 to 1896.

It must also be emphasized again that the financing of 1929 still exerted effects which should also go some way toward mitigating surprise at the low figures of domestic corporate issues. The monthly average of 378 millions in 1936 measures well up to the 1925 to 1929 average, but most of those issues were for refunding. Only the second quarter of 1937 surpasses, with 140 millions per month, the modest figure of 1931 for new capital issues.[1] But under the circumstances full time at machine and machine tool shops was perfectly compatible with that. As far as this goes, the common saying that private investment did not really revive during the upswing must be modified. Other Loans behaved, in fact, more nearly according to expectation and the shift in bank assets that is characteristic of prosperities did not altogether fail to show: other loans of reporting member banks (101 cities) started to increase from the end of 1935, continued to do so up to the last quarter of 1937, and then fell, while investments, partly at least in connection with this, fell from about the middle of 1936 and began to increase again in the last quarter of 1937 and at the beginning of 1938. Variations in deposits were too much under the influence of monetary policy and government action in general to be trusted to reflect the pulse of our process, except perhaps in the second half of 1936 (see below, 4).

All that need be said about stock prices is that they continued to copy fairly faithfully the course of profits, to the point of disregarding the lowering of margin requirements that came into effect on Nov. 1, 1937, and the relaxation of the rules about margin trading that was decreased in December.

[1] Then they fell off to 75 in the third and 45 in the fourth quarter. The figure for the first quarter of 1938 is 37 millions and for the second, 68 millions a month. But issues for refunding bank debts are included.

If wholesale prices (B.L.S. index of all commodities) may be said, according to the guess we ventured to make in an earlier place, to have in 1933 made up for as much of their fall as was due to the preceding spiral, they should then have resumed their downward course. They would, in fact, have done so but for the rise that was forced upon farm products and foods: the index of the prices of other commodities declined until the second quarter of 1935.[1] The slow and hesitating increase in the latter, which then began and after a setback continued until October 1936, was exactly what we should have expected for the prosperity phase of a Juglar located at this one is within the Kondratieff: we know why in this particular pattern—compare the eighties—prices offer a strong resistance to any forces that strive to raise them, to the internal ones which originate in the mechanism of prosperity, as well as to any external ones, political or other.

But precisely because of this we cannot agree with those observers who hailed the violent rise which occurred in the fourth quarter of 1936, as the sign that prosperity—let alone "recovery"—had come at last. From the standpoint of our process that was, on the contrary, abnormal and calls for external explanation, which, of course, is not far to seek. That rise of prices heralded not prosperity but" inflation."[2] The gears

[1] Textiles and hides and leather in 1935 reacted by a rise to their fall in 1934, the former not quite reaching, the latter surpassing the level obtaining at the beginning of 1934. Metals and metal products, building materials, house furnishings hardly changed at all until the general rise in the last quarter of 1937, and other groups, though displaying more fluctuations, behaved similarly.

We shall in the text confine discussion to the behavior of the Other Commodity Index, because agrarian prices were too much influenced by public policy to be relevant to our discussion. It could be shown, however—perhaps it is even obvious—that they did not entirely fail to reflect our process. We will recall that farm products followed up their spectacular rise in 1933 by an almost equally strong one in 1934 and the first quarter of 1935. From May 1935 to May 1936 they, on the whole, declined; but cash receipts from sales for 1935 were, nevertheless, well above those for 1934. From June 1936 to March 1937 we have another spectacular rise in the index of farm products, resulting in a still larger cash revenue from sales, and for 1937 the latter again increased by about 7 per cent, in spite of the precipitous fall which, from April 1937 to March 1938, carried that index to below the level of the last quarter of 1934. The continuation of the back-to-the-farm movement, which was revealed by a special survey of the division of agriculture of the census bureau (in cooperation with the bureau of agricultural economics, 1938) is, hence, not surprising, though interpretation must differ from that for the same movement during 1930 to 1932.

[2] The meaning of that term is obvious in this case. And, however we may dislike the word, there is no other which in this connection would be equally suggestive of a self-reinforcing sequence of increases in monetary values, receipts, and costs that will, unless stopped from outside, go on indefinitely, each step enforcing the next and defeating the effects of the preceding one. The role of armament demand in the rise of some prices (copper, scrap, and so on) as well as in other features of that prosperity (operating rate of the steel industry) must not be forgotten, however.

of the engine composed of public spending and newly created facilities for credit expansion began to mesh. The case illustrates, as regards the former, the proposition that income-generating expenditure may raise the price level in the presence of underutilized resources and, as regards the latter, the proposition that increasing the lending power of the banking system does next to nothing in the depression which it is intended to remedy, and very little in recovery, but takes effect when it is not intended to do so, *viz.*, in prosperity. It equally illustrates the mechanism that works by two levers, anticipations on the one hand and, what is more important, a race between prices and wages[1] on the other. Of course, only fractional use was actually made of the powers of the deposit-manufacturing machine, but this is no objection to that diagnosis. And it is significant to observe how much of it went into financing of households' expenditure. Banks, trying to find outlets for their idle cash and responding to the incessant appeals, underlined by threats, that they should lend more freely, sometimes went to the length of inviting applications for personal loans by newspaper advertisements, but more commonly financed intermediate lending agencies and retailers' receivables, from installment paper to open accounts. Cash lending by other types of lenders also increased. Thus, consumers' credit which had been reduced by depression rose again to the 1930 figure or nearly so. We are not going to reopen the theoretical problem of consumers' credit. It is enough to point to the fact, its relation to prices, and its importance in any relapse, which it may be sufficient, long before any great percentage of households default, to turn into a vicious spiral.

The powers of credit creation being what they were, that process could not only have gone on indefinitely but also at a pace beyond the possibilities of expanding physical output. We cannot, therefore, completely rely on the automatism of our process for full explanation of the precipitous fall of prices in the last quarter (the rise ended with the first) that rapidly tapered off in the first half of 1938. But expectation from our model is for a fall during recession phases, and the recession of a Juglar that runs its course on a Kondratieff downgrade should end up with a price level lower than that of the neighborhood from which the Juglar rose. If the fall that actually occurred was from a higher level and hence steeper than can be explained by our process, the eventual result was not so different from what it should have been if nothing else had contributed to it. We should even have expected a decline to below

[1] If such a race is not allowed to start, results may be different and more akin to those predicated by the better type of "reflation" theories. The German and Japanese cases are conspicuous and the English case is a less conspicuous instance of the success that may attend a corresponding policy under appropriate conditions. For further comment see below sub 5.

the figure of the second quarter of 1935. No group save farm products, foods, and textiles fell as much as that, and the index of commodities other than farm products and foods never returned even to its annual figure for 1935. There is a strong presumption that, barring monetary management and other price-raising policies—policies, that is, which are price raising in effect, whatever the intentions and phraseologies—price level would continue to fall, though gently, for more than another decade.

It may be noted that of the 784 commodities which enter into the B.L.S. all-commodity index, the 189 items that fell most from 1926 to 1933 (when their prices ranged from 5.4 to 42.9 per cent of the 1926 figures) were at the end of 1937 on the average at about 60 per cent. Of these all but 10 belong in the categories of extractive raw material, agricultural products, and little-processed staples. The 190 which fell least (and in 1933 stood at between 78.1 and 118.3 per cent of their 1926 prices) were at the end of 1937 on the average at about 100 per cent. Highly finished articles form the bulk of this group, such as chemicals, agricultural implements, and so on. The implications of this are in many cases weakened, in some reversed, by taking account of changes in quality. In others, special conditions explain the "rigidity." In no case is it possible to infer from these facts alone anything about lack of balance in the price system or about lack of flexibility in prices per service unit.[1] The relative fall in raw-material prices foreshadows, and is a condition of, a new equilibrium at vastly increased figures of output.

3. There is thus some justification for going on to speak of Juglar phases. Our main reason for doing so lies, however, in the nature of the industrial processes of the period. This becomes apparent if we ask ourselves what we should have expected to happen. We may think, for example, of our experience with the railroad Juglars of the nineteenth century. They all had a family likeness and were quantitatively dominated by railroad construction not only as long as this was the fundamentally new thing but also for a time of completing development. Historical record does not lead us to expect that innovations of the first magnitude—in a financial sense—will turn up in Kondratieff downgrades: every railroad Juglar had, besides marking a step in the evolution of the railroad system, its own contribution of novelties to make; but quantitatively they were of minor immediate importance—even Bessemer steel was, for instance—as compared with the innovation that made the railroad Kondratieff. We know what made the current one and are thus in a position to form a definite "forecast" in order to compare it with the actual course of things. We also know that downgrades are

[1] On this subject see Professor E. S. Mason's excellent article on Price Inflexibility, *Review of Economic Statistics*, May 1938.

characterized by very numerous small and induced innovations. To these it is impossible to do justice. But the great lines are simple enough to list.

In doing so we do not on the whole meet with disappointment at the first step. This is, first and foremost, the Kondratieff of electricity. The current Juglar should have carried on the work of its predecessors at least as much as the fifth Juglar of the second Kondratieff carried on the railroad work of the four that went before it, *at least* because investment opportunity seems even greater in this case, considering the work to be done within the range of present technical and economic vision.[1] The production of, and the innovations in, electrotechnical manufacturing, in fact, come fully up to expectation, so obviously that we need not stay to prove it. Kilowatt-hours produced passed the 1929 mark in 1935. Power developments have consisted chiefly in progress with the great public ventures: Boulder Dam, Bonneville, Grand Coulee, Fort Peck, and Muscle Shoals, which are to increase capacity installed by over 4 billion kilowatts, and in the smaller projects sponsored under the Rural Electrification Act of 1936, mainly by rural cooperatives. But the amount of construction done by privately owned public utilities is indeed disappointing. We should have expected vigorous expansion in power plants, substations, and transmission lines, and the pecuniary investment corresponding to this and to the incident expansion of equipment should have contributed decisively to the processes of prosperity. Whether or not the failure of the actual development (which was, however, not negligible) to bear out those expectations is to be recorded against the principles that yield them depends on whether or not it is adequately accounted for by some inhibiting factor external to the industrial organism. This will be touched upon later.

In the second place, this is the Kondratieff of the automobile. No such development as that of the motorcar industry has ever broken off suddenly. Therefore the current Juglar should include, or partly consist in, another automobile wave. As everyone knows, we are again not disappointed in this expectation. Such prosperity as there was clearly centered in the motor industry and its satellites, such as tires and inner tubes, plate glass, steel, by-product coke, and gasoline, and this accounts for the characteristic inequality of the upswing as between industries which was evident even in 1936 when improvement had become general. Automobiles (cars and trucks; United States and Canada) recrossed the 4 million unit line in 1935 and the 5 million unit line in 1937, when produc-

[1] In 1935 only 800,000 of the 6,800,000 farms were supplied with electricity. Urban domestic consumption was 673 kilowatt-hours per home, whereas according to Mr. Samuel Ferguson it might be 8,400 kilowatt-hours (?). It increased by 50 per cent between 1929 and 1936.

tion was higher than in any previous year excepting 1929, or, if we take account of the decline in the number produced for export and merely consider production for domestic consumption, about 94 per cent of the 1929 figure. It is true that owing to the slump in the second half of the year part of this output merely went into dealers' stocks, but on the other hand, it must be remembered that part of the increase in the motorization of the country occurred in rural communities (82 per cent of farmers owning cars according to the Bureau of Home Economics of the Department of Agriculture), the demand from which was to two-thirds satisfied by second-hand cars. The essential point, however, is that the industry was not simply, as we have expressed it, "drawn along" by environmental growth or improvement (roads) and that it not merely grew into existing, but also created new economic space. The changes in the product were not merely routine changes in design and so on, such as occur in operating any textile mill, but included also a number of, if individually minor, innovations—33,721 patents were issued in this field since 1934—such as the turret top (all-steel frame), automobile radios, knee-action suspension, nonfading finishes, and others, among them still "incubating" ones as, for instance, the pancake motor.

Moreover, the industry or some of its concerns reached out into neighboring fields and became responsible for innovations in these—the Diesel-engine division of General Motors (new plants in La Grange and Detroit), which had much to do with the increase in speed of trains during the period, and the same concern's activities in the fields of refrigeration, air conditioning, small-scale light and power production, and aviation (Delco Frigidaire and Conditioning Division, Delco Radio Division, Delco Electric Light and Power Plants, Bendix Aviation Corporation, North American Aviation) may be cited as examples. Considerable outlay for current developments, as well as for new and improved plant capacity, attended this development. The "competing-down" process is evidenced by the increasing share in production of the three leading concerns. Behavior of stock prices, wages, and prices of product conform to our general idea of an industry that was still innovating and expanding under the impulse of innovations. Average hourly rate excluding increase in payment for overtime increased, for example, by nearly 20 per cent in 1937 and was then over 28 per cent above the 1929 level.[1] As to price, there is the usual difficulty about quality.[2] Retail sales value in 1937 was roughly 3.85 billions as compared with about 4.77 billions in 1929.

The allied industries all display, though to a varying degree, the same characteristics. For the rubber industry, in particular, every one

[1] In the first half of 1938 the average rate was a little over 90 cents an hour. The working week was (April, 1938) a little over 31 hours.

[2] Discounts and trading-in allowances, moreover, make quoted prices all but meaningless.

of the above statements could be paralleled.[1] Innovation was of a similar type ("supertwist" again, the tractor and implement tire, output of which in 1936 was 1,775 per cent above that of 1933, activities in rubber and even in cotton growing and cotton milling), but price and effect on output must be corrected for the increased amount of service units contained in a modern tire of good quality—according to an estimate by the industry on an average 31,446 miles in 1937 as compared with 18,546 in 1929, which would make a fall in price per mile of something like 38 per cent. Wage rates also make a similar showing.

Improved quality and more economical use progressively deprive steel output of its value as a cyclical thermometer.[2] Only if this is taken into account, do the 33.4 million tons of ingots produced in 1935 or the 46.9 millions produced in 1936[3] acquire their true significance and some comparability with the figures of the preceding Juglar prosperity, and only then is it possible to recognize the output of the first five months of 1937 as truly indicative of Juglar high tide.[4] The relative importance of the lighter steel products, steel sheets, strip wire, tin plate, and so on which, though they enter into farm implements and machinery in general, may be said to be more nearly consumers' goods' material was, of course, greater than at any previous time—absolute output was also at record figures in 1936 and during the first three quarters of 1937—but its variations yet indicate the course of cyclical subphases: lighter products were 47 per cent of the total in 1935, only 42.5 per cent in 1936 when prosperity had got into its stride, and about 43 per cent in the first half of 1937 when it was tapering off. The new advance in rolling ("continuous mills"), foreshadowed at the threshold of the depression, constituted the most conspicuous innovation, but there was a large number of smaller

[1] According to the Automobile Manufacturers' Association's estimate, sales value of automobile-tire shipments (including casings, inner tubes, solids, cushions, and sundries) was 298 millions in 1932, 307 millions in 1933, 324 in 1934, 384 in 1935, 436 in 1936, and thus in 1936 still below not only 1929 (722) but also 1930 (532).

[2] But against the facts that a pound of steel, as we have put it elsewhere, goes in general much further than it used to even in the twenties, and that the share of high-quality special steels and steel alloys increases, must be set the other fact that an ingot yields a smaller amount of finished product in the case of this high-quality steel. Iron ore consumed is, of course, influenced by the rapid increase in the use of scrap.

[3] Capacity per head of population was then at the lowest figure since 1929, but for the reason mentioned this also does not mean what it seems to. Its maximum occured in 1934, after which it was reduced by wholesale scrapping, another indication of rapid technological advance.

[4] But even apart from those considerations, ingot output of January 1937, when the industry operated at 86 per cent of capacity, was nearly at record high, since it was only exceeded by the output during a few months of 1929, which was clearly exceptional. Moreover, it should be remembered that also after 1873 peaks of pig-iron production remained below that for 1872 for quite a while.

ones, principally in the field of alloys and other specialties (flat-rolled steel), but also in others, some of which, such as the progress in welding, were effective in creating new markets. The amounts reported as spent by the industry on new construction and equipment, a little less than 700 millions for 1935 to 1937, do not indicate more than that there was non-negligible investment, for that figure, on the one hand, includes some replacements and mere extensions while, on the other hand, additional allowance should be made for improvements financed under other headings. New blast furnaces—three in 1937, two of them replacing, though of course with improvements, dismantled ones—coke ovens for a million tons beyond replacement, open-hearth furnaces, electric furnaces, and then the new rolling mills mentioned constitute the main items. Behavior of prices, employment, and wages also conforms to expectation. Composite price of steel (American Iron and Steel Institute), which was $67.71 per ton for 1923 and $47.41 for 1933, increased to $56.85 in 1937, average hourly rates were respectively 59.6, 52.4, and (from Mar. 16, 1937) about 83 cents, well above the industrial average and above 1929. Employment (number of wage earners; not man-hours) increased in spite of the labor-saving nature of some of the innovations, and was about 30 per cent above the 1929 level in the summer of 1937 (over three times the number in 1879, which is, however, a census figure and not entirely comparable).

In appraising steel developments and prospects, armament and construction demand must be taken into account.[1] The latter comes in as a negative item, *i.e.*, the cyclical significance of steel production must be interpreted in the light of the fact that this component failed to contribute as much as we should have expected. We have noticed the fact and one of its causes, but an additional remark suggests itself. We would not per se have expected a particularly high wave of residential building during a prosperity phase, although this is more likely to occur—as it did occur in 1925 and 1926—in the downgrade than in the upgrade of a Kondratieff. But we miss enterprise which in this case there were particular reasons to expect. The mass production of the cheap, prefabricated house is one of the most obvious innovations of the present and near future, and it should if anything have been promoted by high

[1] It is, presumably, also necessary to take account of the fact that the demand for railroad equipment, which materially contributed in 1934 and after, was greater than was warranted by the results and prospects of the railroad business, which continued throughout recovery and prosperity to illustrate our competing-down process. Operating revenue from freight of Class I railroads, which at its maximum of 1929 was only 10 per cent above 1920, fell to below 60 per cent in 1932 (minimum) and was not quite 75 per cent at the end of 1936. Revenue from transportation of passengers fell all along except in 1923, reached 30 per cent of 1920 in 1932, was still lower in 1933 and only very little over 30 per cent at the end of 1936 (below 30 per cent for the year).

building costs. Such enterprises first emerged at the threshold of the current Kondratieff (City and Suburban Homes, New York, 1896, Washington Sanitary Improvement Company, at the same time) and prefabrication, domestic electrification, steel developments, and other innovations[1] are so many propelling factors. Yet nothing of that kind happened on any scale, at least until the passage of the Federal Housing Act in 1936 setting up a Federal Housing Administration which was authorized to "insure" mortgages for projects up to 10 millions.

The chemical industry does not disappoint us. Expansion, innovation, and investment were on a considerable scale—advance in the fields of "synthetic organics," of refrigerants, of protective coatings (which also gave an impulse to the paper industry), or of plastics may indicate a type of improvements which sum up to a very substantial item—both within and without the two big concerns. The rayon industry outstripped previous records partly by conquering new uses or markets and partly by technological progress, which included a major innovation. The standard fiber did not even begin to show its possibilities—and threats. New in our sense was air conditioning. Although installations started in 1919, they reached a maximum value of but 17 millions in 1930. The industry was still in the experimental stage. It was only in the prosperity of the current Juglar that it rose to the modest heights of 35 millions in 1935, of 53 in 1936, and about 85 in 1937.[2] Aviation may be said to have reached about that stage in which railroads were in the thirties of the nineteenth century. Aircraft making enjoyed a great boom every year, 1938 also included, setting a new record, mainly, however, because of military demand, which accounted for about 60 per cent of 1937 sales and for most of the highly profitable exports which amounted to 34 per cent of 1937 sales. Even so, the decisive technological advance achieved hardly began to unfold its effects, and total sales (109 millions in 1937) and profits of the eight major concerns were distinctly modest. Still more so was the progress, in everything but equipment and quality of service, of the three great operating companies, whose operating revenue for 1937 did not exceed 25 millions, spelling deficit in all three cases. Two-thirds of their total investments of about 120 millions would *ex visu* of that year have to be considered as lost. Many reasons besides the peculiar difficulties incident to this industry (and the series of disasters) account for this. But since its lack of

[1] One is even fundamentally new, the "cotton house." Mechanization of the actual building was also further developed, but there was no new departure there. Improvement in assembling parts still lags behind improvement in the parts themselves.

[2] (Incomplete) estimates from figures of principal firms by LaRue Applegate, *The Annalist*, Feb. 12, 1937, p. 268.

quantitative significance for the current Juglar is obvious, we need not touch upon its problems.

4. Having thus satisfied ourselves that the processes which in the past used to carry prosperities have not been absent in the present instance, we have established a right to speak of a Juglar prosperity and to infer from experience that it would have asserted itself without any external impulse being imparted to the system by government expenditure or any other factor. In particular, there is nothing to indicate that objective opportunities were smaller or capitalist motivation weaker than they had been, say, in 1925. The problem why that prosperity was so weak, and why it should have been followed by so severe a slump now emerges in its proper setting.

At the outset we dismiss the possibility—which, in fact, has not been sponsored, so far as the writer knows, by any economist—that the steps taken toward freer trade (Montevideo conference of American states and, partially in fulfilment of the pledge there made, the Reciprocal Trade Agreements Act of June 12, 1934, and the Presidential Proclamation of July 8, 1935) can have materially dampened prosperity or intensified depression. Of the 17 agreements actually entered into up to March 1938, only those with Cuba (September 1934) and Canada (January 1936) can possibly have exerted nonnegligible effects in spots,[1] and from what depressive effects they did exert it would be necessary to deduct gains in other sectors. There may even have been a net contribution to recovery and prosperity. If so, it cannot have been significant, however. Exports, which in 1929 had amounted to 5,241 millions, rose from the 1932 figure of 1,611 only to—in millions of full-weight (or devaluated) dollars—1,280 (2,133) in 1934 and to 1,370 (2,283), 1,474 (2,456), and 1,977 (3,295) in the subsequent years. And the effects of general improvement in the world, of devaluation, and of armament demand account for the bulk of that.

It is less obvious that the momentous changes in the sphere of money and credit, which have been the subject of so much controversy, did not, except by facilitating government expenditure, decisively influence economic processes during the years under survey. In order to establish this, we need not go into the principles involved in those changes or into the question of what long-run results are likely to be in the future. We have indeed noticed the effects on money rates, on price level, and on consumers' credit. But the lessons administered by an experience

[1] Even effect "in spots" is in some cases doubtful. American shoe producers were probably no unbiased judges of the dangers that threatened from the Bata concern (at least, inasmuch as it remained outside the United States) or steel producers of the danger to their lives from an "increase in imports of 173 per cent" in the first year of the Belgian agreement, which turns to have been 1.5 millions.

extending over a century and a half and the scarcity of acceptable applications for credit—admitted, in the end, even by fact-finding agencies set up for the purpose of convicting banks of restiveness—prevented excesses which in fact were not at the time encouraged by the federal reserve authorities.[1] The Banking Act of Aug. 23, 1935, codified and made permanent the chief innovations previously introduced, but in doing so it emphasized the restrictive rather than the expansive element in them. Following upon the removal of the restrictions previously imposed upon transactions in foreign exchange (Nov. 12, 1934) it was widely understood in that sense, in spite of the criticism it met from "sound-money" quarters.[2] Later on, it was proved that—at least for once—the brakes of the engine were not mere window dressing. The only problem relevant to our subject, therefore, concerns the use which was made of them and which many people held responsible for the occurrence or the severity of the slump.

Faced with an influx of gold, as persistent as it was natural—since, barring all extraeconomic factors, which of course helped, any commodity will go to where it is being overpaid—and perhaps somewhat concerned about the violent rise in prices, the Treasury and the Federal Reserve Board took action. The Treasury, not prepared to go back upon devaluation, entered at the time of the French devaluation (Sept. 28, 1936) into the Tripartite Agreement with England and France, undisclosed operations under which helped to control the gold movement temporarily. Moreover, in December 1936, it inaugurated the gold sterilization plan: by directly acquiring and impounding newly received gold it prevented,

[1] See, for example, the "conservative" reply of the board of governors of the Federal Reserve System to the chairman of the Senate Committee on Agriculture and Forestry, published in the *Federal Reserve Bulletin* of September 1937.

[2] The act did allow the small state banks outside the system to enjoy insurance of deposits without joining. It did nothing about the division of responsibility for monetary policy between the Treasury and the Board. It increased rather than diminished the Board's independence, such as it was. It developed the tool of open-market operations, sanctioned the Board's power to vary reserve requirements, and otherwise strengthened its hold on the policy of member banks. It failed to include the clause in the House bill about "stabilizing business." It retained the gold cover requirements for Federal reserve notes and deposits. It also retained, although it made them illusory, eligibility requirements. It no doubt encouraged long-term lending by member banks, but not more than it had been encouraged before. It perpetuated deposit insurance. Much irrelevant discussion arose from confusions between the technically unsatisfactory working of eligibility requirements and the principle which they faultily expressed; between responsible practice of member banks and *laissez faire;* and between their functions in the economic process and such things as their "duties to depositors." Fundamental truth was often clothed in wrong and fundamental error in correct arguments. Solicitude for public morals and public welfare often vested the garb of group interests, antisocial tendencies and levity the garb of "progressiveness." On the whole, however, the practice envisaged by the act as it stands is still serious banking.

up to September 1937, any effects of the influx on bank reserves and deposits, the increase in monetary gold stock and treasury cash going into an Inactive Gold Account—an important, if negative, measure.

The Board, using its new powers, directly operated upon the incubus of excess reserves by raising reserve requirements, first by 50 per cent (effective Aug. 16, 1936) and then again by $16\frac{2}{3}$ and $4\frac{2}{7}$ per cent (effective Mar. 1 and May 1, 1937). Total and excess reserves had been rising steadily from the beginning of 1933 for all other, and from the beginning of 1934 also for New York City member banks, thus absorbing much of the flood and once more illustrating the value of the theory that banks are always "loaned up." Great as was the gold influx in 1934, it was surpassed in 1935 by more than 50 per cent (total net gold imports roughly 1.75 billions, over half of them from France). Together with various smaller items which need not concern us, this spelled an increase of nearly 1.9 billions in the monetary gold stock—an increase of about 350 millions in money "in circulation" and an increase of about 1.5 billions in members' reserves, or of about 1 billion in their excess reserves. Influx continued, though with abated force and significant intermissions, throughout 1936: the monetary gold stock rose by more than 1 billion and members' reserves by almost as much, the loss to circulation being almost wholly compensated by the reduction of federal balances at reserve banks. In 1937 the tide swelled again, 1.3 billions producing an increase in monetary gold stock of 1.5 billions, in spite of the reversal of the movement in November and December. But, as stated above, owing to the sterilization policy this did not go into bank reserves, which continued, however, through 1937 to move at the high level attained toward the end of 1936, not far from 7 billions for all member banks. The increase in deposits (adjusted demand deposits; all reporting member banks) of about 2.5 billions in 1935 and of about 1.7 in 1936 substantially reflects government disbursements and, until May 1936 investments, thereafter other loans.[1] They began to fall at the end of the first quarter of 1937 and went on falling almost uninterruptedly, though more in New York than Outside, throughout that year. The first part of this development until about the middle of 1936 does not call for additional comment; the second part brings us back to our problem.

In our survey of time-series contours it has been observed that prosperity did not bring about that stiffening of money rates which, even in a prosperity within a Kondratieff depression, we should have expected. The facts we have just glanced at—excess reserves, in particular—amply explain this. It has also been pointed out that, given these conditions, the microscopic rise of some rates—commercial paper rate not among

[1] There was a slight contraction, for the 100 cities outside New York more than slight, at the beginning of 1936, which was quickly made up for and is cyclically understandable.

them—that occurred in 1936, and the somewhat more perceptible though still insignificant increases that occurred in 1937 also in bond yields, cannot primarily be explained by the modest increase in business borrowing but was due mainly to monetary management. It was, in fact, a reaction to the increase in reserve requirements—under conditions of imperfect competition curtailment of even an unsalable excess of supply can have effect on price.[1] But while monetary management produced this effect, it certainly did not, via the rate of interest, produce any other; for no business calculation can in practice be affected by so minute an increase.

But together with the increase in all other loans, the increase in reserve requirements by 50 per cent was the signal for member banks to start reducing their investments. The effectiveness of this signal can, however, have been due only to the fact that member banks had for other reasons already begun to feel uneasy about their portfolios. For no reaction was in itself enforced by that measure, which only reduced excess reserves from about 2.9 billions (July 15) to 1.8 (Aug. 19), because almost simultaneous treasury disbursements absorbed the effect to the extent of about 360 millions.[2] It is true that application of this weapon, as shaped, will unavoidably create some difficulties unless the reserve positions of all members are exactly equal. But these difficulties were negligible in this case, and very few members had to borrow small amounts from reserve banks at the critical time. Even withdrawals of funds from New York correspondents did not amount to much, nor did the sales of investments between the middle of July and Aug. 19 (160 millions) and in November. Adjusted demand deposits declined but slightly in August and then increased vigorously again.

It is a question of some interest why the Board did not leave things at that. The prospective reduction in federal income-generating expenditure was, after all, no secret, and *pro futuro* the gold influx was being taken care of by the sterilization policy. The revival of business borrowing, which kept up total earning assets of members and even increased outside deposits, and the strong increase in money in "circulation" were no reasons for further action, considering the phase of the industrial process. Mechanistic views about the Supply of Money seem once more to have carried more than their due weight. But even so, the announcement on Jan. 30 of a further increase in reserve requirements of 33⅓ per cent cannot be held responsible for any depressive symptoms and, especially, for the rapid fall of corporate security issues in the third

[1] This argument, of course, applies also to the upward shift in business demand for loans. But it is reasonable to suppose that the conspicuous measure of raising requirements was the more potent factor.

[2] That is why excess reserves were at about 3.25 billions on Aug. 15.

and fourth quarters of 1937. In case the behavior of interest rates should not be considered sufficient proof, we will observe how well the market stood the experiment. Some management was indeed necessary, especially at the second step, and transition was then not quite so easy as it had been with the 50 per cent increase. In April, banks prepared themselves for that second step, which, as it seemed at the time of the announcement, should have reduced excess reserves to 500 millions, but reduced them only to about 850, owing to an increase in total reserves, the decline in deposits, and government disbursements. The reserve system also helped by an open-market purchase (96 millions), and all this raised excess reserves to 1.6 billions toward the end of April. Thus prepared, the market went through the treasury financing and the quarterly tax payments of June without any difficulty. Not even New York banks (which one would think should have displayed some symptoms of strain) had to borrow from the reserve bank. Bill dealers reduced rates on bank acceptances on June 22 after 200 millions of treasury bills had on June 17 and 18 been repaid without replacement. There was some interbank borrowing, but to a very small extent. It is true that members liquidated investments to the amount of about 2 billions, counting from the peak in 1936 to the end of September 1937—all other loans reached a peak in October and then declined—and that this naturally weakened the market of governments. But this was, as our narrative amply shows, not due to strain, nor did it cause any. It was, moreover, what happens in every prosperity without producing any depression.

In deference to the prevailing belief in the *gratia efficiens* of the supply of money, those steps toward normalization of money-market conditions were retraced precipitously. Both Board and Treasury went to entirely unnecessary lengths in the opposite direction when the slump had developed. While it is not correct to say that what monetary management has proved itself able to learn was how to create slumps, it is correct to accept that panicky retreat as an indication of the practical value of brakes, the application of which so quickly results in excess of speed. The Treasury first desterilized 300 millions of gold in September,[1] then reduced the sterilization policy to a shadow by the decree of Feb. 14, 1938, and finally reversed it by releasing on Apr. 14, 1938, the whole of the 1.4 billions of gold in the inactive account, *i.e.*, practically by transferring the

[1] This might have been enough to put a stop to divestment by member banks, since it taught them that benevolent powers would always step in to relieve them of any danger, however remote, of illiquidity. As a matter of fact, however, the discontinuance of sales of governments by members which then occurred, also coincides with a beginning decline in loans, which then fell by about ½ billion within the year. Reversal of the downward tendency in investment was as much contingent upon this as upon the release of gold, or more so.

equivalent to the Treasury account with federal reserve banks. Thereupon, the Board, which had already authorized further open-market operations—kept within modest limits, however—and reduced margin requirements on security transactions in November, also reduced reserve requirements by 13.25 per cent[1] on Apr. 15, 1938. Members' total reserves having risen toward the end of 1937 because of that release of those 300 millions of gold, the increase in monetary silver, the open-market operations, and later also because of some purchases of gold, excess reserves were more rapidly built up again. They were 2.5 billions by Apr. 20, 1938; 2.75 for June; and went to 3.15 in July.

Treasury redemption of bills—which was the chief use so far made of the formerly inactive gold—sent their yields to practically zero. Adjusted demand deposits moved in the opposite direction to total loans plus investment, increasing by 768 millions,[2] while the latter fell by 250 in the second quarter of 1938 and cash piled up. These measures were more recently supplemented by advance on the other line of expansionist policy, *viz.*, by new rules for the lending practice of member banks, calculated to "liberalize" it. Thus we have before us, untouched by previous experience but implemented by much more powerful tools, the main ideas of the policies of 1933–1934. No doubt, argument based on the logic of *post hoc ergo propter hoc* will be heard and read very soon. It should be noticed, moreover, that some of the steps taken cannot be retraced, that the rest can be retraced only with difficulty, and that, as we have put it, such a policy, while ineffective in depression, tends to become viciously effective afterward. Monetary policy per se may, hence, become a major factor in the near future; but it had but little to do with the prosperity of 1935 to 1937, and nothing with the subsequent slump.

Finally, we will return to income generation by means of government expenditure and try to appraise the effects of its cessation in 1937. Our historical survey (Chaps. VI and VII) has supplied us with instances of crises that occurred near the upper turning point of a Juglar. Although recession is not depression, the transition from prosperity to recession, implying as it does a difficult reorientation, always creates some danger of breakdown. We have, it is true, also seen that severe slumps at or near that point are without exception associated, not simply with excesses of speculation, but with excesses of speculation induced by a supernormally rapid pace of industrial development, conditions which were conspicuously absent in the case before us. But the idea suggests itself neverthe-

[1] Reserves against time deposits were reduced from 6 to 5 per cent, against demand deposits to 22.75 per cent for central city banks, to 17.5 per cent for reserve city banks, and to 12 per cent for country banks.

[2] Velocity, of course, fell rapidly and by the middle of 1938 was about 25 per cent below its maximum annual figure (1936).

ess, that government expenditure may have played the role which in the ast belonged to the expenditure by innovating firms and that, considering its quantitative importance, its cessation acted in much the same manner as the cessation of the latter did in previous cases. The elements of truth in this argument are no more obvious than its limitations.

There can be no doubt not only that income generation by government must always create problems of adaptation, but also that in this case its timing was singularly infelicitous.[1] Its high-water mark came exactly at the time when the economic process could most easily have done without it and its cessation exactly at the time when the economic process was in its most sensitive phase. Reference to our experimental count will illustrate this drastically. The widespread opinion that the cessation of that income generation was the "cause" of the slump thus derives some support from our analysis,[2] although it should be superfluous to add that no argument for permanent deficits follows from that.

But the explanatory value of the shock thus imparted to the system should not be exaggerated. Since no excessive expansion or speculation had been called forth by the preceding spending policy—any more than by such "natural" prosperity as there was—and since there was, as we have seen, no monetary strain, the usual starters of downward spirals were not operative. The injections were not suddenly discontinued but tapered off gradually. Hence, the analogy with previous crises that occurred around the upper turning point fails after all. The obvious inference is that the collapse induced by the cessation of income generation was so severe, and that the jolt which it would in any case have been natural to expect turned into a slump, because under the surface watered by income generation the processes characteristic of recession in our sense (see Chap. IV) failed to work as they always had worked before. The parachute refused to unfold.

5. *a.* This view, which implies the presence of an additional and more fundamental problem, is hardly controversial and, in fact, shared by very many fellow economists who, as the reader knows, offer in explana-

[1] So was the disposal of the amount spent. Sums were thrown about in the country almost at random, without systematic regard to existing structures and probable developments, thus creating industrial and commercial positions that rested on nothing but this temporary flood of money and were bound to die off when it ebbed.

[2] Since the payments under the Social Security Act materially helped in (slightly more than) balancing the combined federal cash account, it is even true to say, as has been said by some economists, that those payments had for the time being a "deflationary effect." As a long-run proposition this would, of course, not be true. Another point should be noticed in passing. The downturn of 1937, following upon that of 1930, impinged upon a business community which for the time being was supernormally "crisis conscious." Moreover, many concerns may have harbored vivid recollections of what the "stand" they had made in 1930 had cost them.

tion the theory of vanishing investment opportunity.[1] The vogue that this theory enjoys in this country is obviously due to the occurrence of that slump after what is universally recognized as an abnormally weak prosperity (or "recovery"). Since in order to understand the economic situation of our time—and much besides—it is essential to realize fully why that explanation cannot be accepted, we will restate the case against it at the risk of repetition.

The validity of that theory is not denied on the ground that its basic proposition is wrong. This proposition can in terms of our analysis be rendered as follows. Capitalism is essentially a process of (endogenous) economic change. Without that change or, more precisely, that kind of change which we have called evolution, capitalist society cannot exist, because the economic functions and, with the functions, the economic bases of its leading strata—of the strata which work the capitalist engine—would crumble if it ceased: without innovations, no entrepreneurs; without entrepreneurial achievement, no capitalist returns[2] and no capitalist propulsion. The atmosphere of industrial revolutions—of "progress"—is the only one in which capitalism can survive. Hence the capitalist organism cannot, in case opportunities for innovations give out, settle down into a stationary stage without being vitally affected, as it could if "changes in production functions" were an incident to its life process and not the essence of it. In this sense stabilized capitalism is a contradiction in terms. Moreover, it is reasonable to expect that this kind of stabilization would produce a class of abnormalities and instabilities of its own. There would be increasing reluctance to invest or even reinvest, a tendency to "live on capital," to hold on to balances, to recreate vanishing returns by all the shifts open to a class which, though by then economically functionless, yet would, like its feudal predecessor, for a time retain the powers acquired by and associated with the functions previously filled. Maladjustments, unemployment and underutilization of resources—though now of a different nature—and neutral, unstable, and subnormal equilibria might hence well stay with a nonexpanding world.[3]

[1] For an admirable exposition of that theory, see A. H. Hansen, Full Recovery or Stagnation, 1938.

[2] This, of course, is putting it strongly. But the necessary qualifications must be supposed to be by now familiar to the reader, as must also the argument summed up in that statement. It should be observed that what we have called Growth is not separately mentioned. The reasons for believing that the class of phenomena thus designated is not important for the argument which is to follow will presently become obvious.

[3] Such a world would not display cycles in our sense: a cycle in a nonexpanding world is also a contradiction in terms. But fluctuations of the type which we have called waves of adaptation (Chap. IV) would continue for some time. And the circumstances alluded to in the text may, while transition lasts, also cause fluctuations of yet another type.

The colors of this picture will fade if proper account be taken of the fact that transition to a stationary state would not be sudden but would necessarily come about by slow degrees (see below). Also, it must be borne in mind that the proposition in question is not as a rule formulated in that way. Some writers try to demonstrate it by means of models which assume unchanging production functions or "methods of production" and thus exclude the pivot on which it turns. Most writers unduly stress the mere mechanics of the saving-investment process. But as far as the result is concerned, there is nevertheless affinity between their view and the one submitted in this book. We may even admit that one of the difficulties of that transition may proceed from people wanting to invest and getting ready to invest, while they are not able to do so at rates of returns acceptable to them (see below). It will, therefore, be convenient to accept the current slogan for the purposes of the argument in hand. The connecting link which allows us to do so is the fact that innovation is, directly and indirectly, the great source of investment opportunity.

Nor do we take issue with the companion proposition that investment opportunity in this sense may, and in fact is quite likely to, vanish sometime in the future. The reasons usually offered for this are old acquaintances of ours.[1] For instance, although we hold that the conquest of the air may, entrepreneurially speaking, be as important as or more important than the conquest of India and that, from the standpoint of our analysis, the two are exactly the same kind of thing, we shall not deny that opportunities of the latter type are being, or ultimately will be, exhausted. Or, although we hold that nothing at all reliable can be predicated about it, we do not deny the possibility that technological innovations may some day give out, either "objectively" or because people do not care to proceed with the available ones.[2] We have even an element of our own to add. The mechanization of "progress" (Chap. III) may for entrepreneurs, capitalists, and capitalist returns produce effects similar to those which cessation of technological progress would have. Even now, the private entrepreneur is not nearly so important a figure as he has been in the past. We have, moreover, noticed (Chaps. VII and XIV) the implications of chemical and other developments which *may* result in making innovation capital saving or at least less capital absorbing than, say, it has been in the railroad age. Also, it may well be true that an

[1] See, in particular, Chaps. III, IV, and IX (retardation).

[2] It should be repeated, however, (see Chap. IX) that any assertion about this would be pure speculation. So would any assertion to the effect that the innovations which have materialized so far were more important, more profitable, or more capital absorbing than those that are to come. Such assertions repeat Malthus's methodological error with a vengeance.

increasing proportion of the "things still to be done" will lend itself to public rather than private enterprise,[1] although this would per se not mean more than the addition of another component to a tendency toward public enterprise which exists independently of it.

Finally, we do not even exclude the possibility that investment opportunity might vanish through saturation. The argument from declining birth rates, in particular, loses but little by the fact that it is often inadequately formulated. Reduced "need" for expanding capital equipment in a society in which population increases at a decreasing rate—still more in a society in which it is stationary or declining—is not the point. It does not matter whether the purposes to be served by an expansion or reorientation of the productive apparatus strike the observer as particularly "necessary" or not—whether it is radio sets or cradles that are in demand. And so long as the majority of people in the civilized, let alone the uncivilized, nations are as far from anything like saturation[2] as they are now, no shrinkage of total investment opportunity will result from the saturation of a particular want—even if we disregard the temporary, but for the time being very important, effect of the changing age distribution. But there is a more fundamental objection which at this state of our analysis should be familiar to the reader: "needs," whatever they may be, are never more than conditioning factors, and in many cases mere products of entrepreneurial action; it is not they that set the capitalist engine into motion, as the old household examples (China and so on) show; and economic development (capital consumption included) has *never* been conspicuous in the countries which to the observer seem to be most lavishly supplied with needs. However, the argument may be

[1] The criteria according to which it is to be decided whether a given proposition is economically more fitted for public than for private enterprise vary, of course, historically and are at present blurred by the prevailing preference for the former, which is largely extra-economic. But we need not go into this beyond reminding ourselves that there is a class of cases in which inadequacy of private profits indicates inadequacy of social advantage.

[2] Once more we meet that overemphasis on the possibilities of expansion within existing lines which we repeatedly met before. But it should be observed that even these are important enough to negative any idea of deadlock from that source for quite a time. Another argument may be noticed here. It has been held that the process of providing "capitalist" equipment for the population—the stock of producers' goods necessary for the Boehm-Bawerkian "roundaboutness"—was a historically unique and uniquely capital-absorbing task, which has been performed once for all in the nineteenth century. This seems not only to assume that, within the production functions that existed at any time, capital equipment has been carried to saturation point, but also to overlook that the insertion of new production functions in many cases, not to say typically, annihilates the old equipment economically, so that that task has to be periodically repeated and, as experience abundantly shows, repeated by means of new savings and new credit creation. Long-distance transportation by motorcar, "replacing" long-distance transportation by railroads, is surely not financed from the depreciation accounts of the latter.

upheld, at least to some extent, in another way: as has been pointed out, provision for an indefinite family future is of central importance in the scheme of bourgeois motivation, and much driving power may be eliminated by childlessness.

b. But we do take issue with the third proposition, which asserts the relevance of those considerations for the diagnosis of the situation of 1938. Obviously, we have been speaking of longest-run tendencies just now. Opportunities for technological or organizational or commercial innovation cannot be thought of as vanishing (if they are vanishing) except very gradually. If there actually be a general tendency toward decline in capital absorption, it can assert itself only in time, though shocks to individual industries may be both sudden and serious. The rate of increase in population declines imperceptibly per year. The call of entrepreneurial adventure is too deep-seated to cease dramatically *of itself.* And so on. Such tendencies, even if well established as some of them undoubtedly are, qualify but ill for the task of explaining the peculiarities of a particular Juglar. They may affect contour lines over time and bend them downward. But they cannot explain the weakness, relatively to its predecessor, of any given prosperity, and they look absurd in the role of explaining factors of a sudden slump. If it be held, nevertheless, that one or all of them suddenly acquired dominating importance at any given historical juncture, such an assertion requires, in order to be taken seriously, proof not only of a secular tendency or "trend" but of the presence of circumstances adequate to account for so improbable an occurrence as sudden action would be.

It has been observed above that the essentially gradual *modus operandi* of those tendencies must enter into any speculations about the phenomena to be expected from vanishing investment opportunities. For instance, there is no warrant for the assumption which has been made the basis of far-reaching conclusions, that in the face of them people will go on saving at a rate sufficient to produce difficulties. Owing to the persistence of habits, this could conceivably be so in the short run of a depression phase, though we have seen plenty of reasons to doubt it. But in the short run investment opportunity cannot decline perceptibly. And in the long run there is no reason to suppose that savings—and both things and psyches in general—will not adapt themselves. Moreover, it is obvious not only that declining rates of savings will accompany declining birth rates because both phenomena flow from the same sociopsychological source, but also that there is a causal connection between the two.

But reasons less general than that estop us from accepting the theory in question. Whatever may be thought about those "trends" and the way in which they operate, none of them has in this country advanced far enough to bear it out. We have seen in some detail that "objective"

opportunities are not lacking. We are less than ten years removed from as vigorous a prosperity as was ever witnessed and from a depression provably due, in the main, to the pace of preceding "progress." It has been argued that that prosperity differed in character from previous ones by the prominence of (durable) consumers' goods production, and hence indicated that a fundamental change had, already then, occurred in the cyclical process. Of course that prosperity differed from the Juglar prosperities of the Kondratieff upgrade. But it did not differ in character from the comparable Juglar prosperities of the preceding Kondratieff downgrades, and therefore does not indicate any fundamental change in the working of the capitalist organism. Expansion of production of consumers' goods, including expansion in the fields of utilities and of public works, was, proportions guarded, no less prominent a feature in the developments of the twenties, thirties, seventies, and eighties of the nineteenth century. Nor can it be urged that fundamentally new opportunities of first-rate magnitude are not in prospect. Barring the question whether that is so, it is sufficient to reply that in the eighteen-twenties hardly anybody can have foreseen the impending railroad revolution or, in the eighteen-seventies, electrical developments and the motorcar. No less an authority than John St. Mill[1] compromised himself by holding in 1870 that the possibilities of capitalist enterprise were substantially exhausted. *Vestigia terreant.*

As applied to the American situation of today and to the abnormalities of the current Juglar, the theory that the capitalist process is stagnating from internal causes inherent to its logic and that income generation by government is nothing but the self-defense of a shriveling organism, is therefore a complete misfit—at best a mistaken interpretation of certain aftereffects of the world depression, at worst the product of wishful thinking on the part of all those who crave for a presentable basis for policies they approve. It still retains two merits, however. The one consists in the many elements of truth which, as we have seen, enter into its arguments as distinguished from its application. The other consists in the recognition, by implication at least, of the fact that, as any social system depends for its functioning and survival on the actual delivery of the premia it holds out, so capitalism depends for its functioning and survival on the actual delivery of the returns, anticipation of which provides its motive power.[2] For this is, after all, what the stressing of investment

[1] This has been pointed out to the writer by Mr. R. Abel-Musgrave.

[2] See Chap. XIV, Sec. C, 2. This would in the times of intact capitalism have been taken for granted. In our time, however, the attempt to run capitalism in an anticapitalistic way has given rise to arguments which came near to denying it. Hence the recognition by the theory of vanishing investment opportunity of that rather obvious point may well be recorded to its credit.

opportunity amounts to. Slightly extending and modifying the meaning of that phrase, we may hence continue to use it ourselves and *agree* that it is vanishing investment opportunity which is the matter with present-day capitalism—anything can, in fact, be put into that form, the structural principles of the capitalist process being what they are. And our task then reduces to substituting for unconvincing reasons why investment opportunity should be vanishing, a more convincing one.

c. The analysis of Chap. XIV, Sec. B supplies it: capitalism produces by its mere working a social atmosphere—a moral code, if the reader prefer—that is hostile to it, and this atmosphere, in turn, produces policies which do not allow it to function. There is no equilibrating apparatus to guarantee that this atmosphere or these policies should develop in such a way as to prevail in the fullness of time, *i.e.*, when the capitalist process will have really spent its force or be spending it. Whenever they prevail sooner, there is danger of a deadlock, by which we mean a situation in which neither capitalism nor its possible alternatives are workable. This is what, to a certain extent and presumably not yet for good, has happened in this country.

It might be replied that anticapitalist attitudes are also, like the tendencies adduced by the theory of vanishing investment opportunity in its usual acceptance, a matter of slow growth and, hence, similarly open to one of the objections raised against that theory above. But we are able to do in this case what cannot be done for those tendencies, *viz.*, to show that, and how, that attitude came *suddenly* to a head and suddenly acquired dominating importance. And anticapitalist policies, unlike attitudes, may be dated.[1] The coincidence in time between them and disappointing performance of the economic engine is indeed striking. We will survey them under the headings of Fiscal, Labor, and —for want of a better expression—Industrial policies.

At least since 1932 the burden of direct taxation imposed upon that part of the national revenue which goes to the higher and highest brackets

[1] It should be observed at once that, anticapitalist measures being, of necessity, measures hostile to private investment opportunity, the accredited exponents of the theory of vanishing investment opportunity must perforce agree with the argument that is to follow; for the consequences of inadequate investment opportunity are obviously independent of its causes. They will be the same whether these causes are internal or external, *i.e.*, whether the process itself, by virtue of the law of its life, produces inadequate margins, or these margins, if produced, are or would be taken from recipients, or, finally, the anticipation of them is in other ways prevented from having its normal effect. Hence, those economists will in any case, even if unconvinced by our argument against their explanation of vanishing investment opportunity, at least have to insert ours into their schema. If they do insert it in a place appropriate to the importance of its constituent elements, there will not be much room left for difference of opinion.

was undoubtedly high enough[1] to affect "subjective" investment opportunity or, as we have previously expressed it, to shift the watershed between "to do and not to do." No other than direct or mechanical effects need, however, be attributed to this burden until roughly 1933–1934, because the increase in taxation was then accepted as a sacrifice to be made in a national emergency, as it had been during the war. But from the revenue act of 1934 on, this was no longer so. Permanence of the burden for reasons unconnected with emergency, involving a transfer or redistribution of wealth which in the highest brackets amounted to the socialization of the bulk of private income, and in some cases taxation for taxation's sake and regardless of insignificance of results for the Treasury,[2] then became part of an established policy, the general drift of which was not reversed in 1938. Some outlines of the theory of the subject have been presented in the preceding chapter. Aspects other than effects on the process of economic evolution are irrelevant to our purpose. The quantitative importance of the change to the interests concerned is unquestionable and unquestioned. Hence, we need not go into details or follow up the successive steps embodied in the revenue acts from 1934 to 1937, but can confine ourselves to the following comments.

As the above suggests, the writer is inclined to stress the importance of the income, corporation, and estate taxes at the expense of others which, being novelties, have been more widely discussed. The facts that the limit of exemption from the income tax is very high, the flat rate very low, and the surtax distinctly moderate up to an income of $30,000, are irrelevant to the argument. It is above that range, principally within a group of not more than 30,000 or 40,000 taxpayers that, the structure of American industry being what it is, those taxes, raised within a few years to their present figures, exert a serious influence on "capital supply"[3] and

[1] For a careful evaluation of that burden, including an estate tax equivalent and covering the years 1924 and 1927 to 1933, see M. Yaple Sweezy, Direct Taxes by Income Classes, *American Economic Review for December* 1936.

[2] The insignificance of financial results is very striking in the case of the estimates—which are what is relevant as regards purpose—of additional revenue from the revenue act of 1935. The increases of the surtax were, for example, to yield 45 millions more, the graduated income tax 37 millions, the excess profits tax 10 millions, the increase of the estate tax plus the gift tax 101 millions—the nibbling of a mouse at the mountain of the deficit. The arguments that this was a matter of that budget and that in future booms much higher yields could be expected are not to the point. The latter, moreover, begs the fundamental question.

[3] The writer does not wish to stress, under the circumstances of the past years, short-run effects on quantity of monetary capital and its rate of increase. As far as these go, that fiscal policy may even have had a net result favorable to prosperity and unfavorable to depression through enforcing an increase in total expenditure. That element is primarily stressed in their interesting study on Economic Consequences of Recent American Tax Policy, Supplement I to *Social Research*, by Professors Colm and Lehmann, who attempt

business behavior, which, of course, is greatly intensified by the failure of legislation to permit the carrying forward of business losses,[1] by the new treatment of personal holding companies and by other inroads into actual or potential capital.

The so-called capital gains tax has been held responsible for having accentuated, if not caused, the slump. The writer is, however, unable to see that it can have had much to do with the processes of the current Juglar except by way of damping speculative ardors and thereby making issues of stock more difficult than they would have been. The financing of the positive phase cannot, considering the abundance of cheap money, have been seriously interfered with by this; the subsequent slump should, if anything, have been mitigated by it. Other points, in particular the effect it exerts—not by reducing "over-saving" but—by enforcing dis-saving, though relevant to a prognosis of the results to be expected in the future from the capitalist engine and not substantially affected by the modifications introduced by the revenue act of 1938, need not concern us here.

The antisaving theories and the *ressentiments* of the day found a very characteristic expression in the special surtax on undistributed corporate income (undivided profits tax), which ranged from 7 to 27 per cent. Discarding again the question of the long-run effects which the measure might have had if it had been allowed to remain on the statute book, we may split immediate effects into those of a further increase in the burden on corporate income and those of the specific penalty imposed on corporate accumulation, and confine ourselves to the latter. It possibly resulted in an absolute and relative increase in distributed income which is neither certain nor easy to evaluate because there were also other reasons for the increase that actually occurred, but which, whether great or small, presumably increased, or helped to counteract the decrease of, system expenditure. Nevertheless, the measure may well have had a paralyzing influence on enterprise and investment in general. The actual presence of accumulated "reserves," and the possibility of accumulating them quickly, strengthens the position of a concern with respect to the risks and chances of innovation and expansion which it confronts. One of the causes of the efficiency of private business is that, unlike the politician or public

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quantitative evaluation of the difference made to the supply of capital. But to the writer supply in the sense of "willingness to sell," that is to say in this case, willingness to invest, seems to have been the more immediately important thing affected.

[1] That feature, for which no rational argument has ever been offered to the writer's knowledge, is more important than it seems. A loss which can be carried forward without penalty is one thing, a loss which cannot, quite another thing. A risk which it may be rational to take in the first case will frequently have to be refused in the latter. This would not, of course, apply to "small" or even moderate taxes.

officer, it has to pay for its mistakes. But the consequences of having to do so are very different according to whether it risks owned or borrowed "funds," or whether a loss will only reduce surpluses or directly impinge upon original capital. Adequate book reserves are as necessary a requisite as adequate stocks of raw material, and in their absence, or with reduced facilities of acquiring or replenishing them, an entirely different and much more cautious business policy would impose itself. In prosperity, investment opportunities would be seen in a perspective of reduced proportions; in depression, firms would have to bow more readily to the storm. In the latter case in particular, the important class of considerations—pure business considerations among them—that used to induce many firms "to make a stand" for some time, even at considerable immediate loss, would tend to vanish from the businessman's mind. All this, it is true, vanishes from the economist's mind as soon as he buries himself in the mechanics of aggregative theory. But many industries, which are among the chief economic assets of the nation and of which the automobile industry is the standard instance, would under a regime of undivided profits taxes never have developed as they did. And as regards the current Juglar, the actual course of events both during prosperity and during the slump is compatible with the opinion that this attack on the foundation of corporate finance weakened the former and intensified the latter to a non-negligible extent.[1]

It should be observed that this is a matter of value of assets and not of liquidity, which under the conditions prevailing in this country since 1931 was never a problem for a concern of unimpaired standing. Similarly, the argument that accumulations make it easier for a concern to live in depression and to "cushion" the effects of depression on the economic process by keeping up dividend and wage payments cannot be met by pointing out that only a part of total accumulations is held in cash or near-cash and that the rest cannot be "paid out." It is true that from the standpoint of the individual management liquidity constitutes an advantage. The ease with which the bulk of American large-scale industry steered through the vicissitudes of 1931 and 1932 was to a considerable extent due to it. It is also true that accumulations which are held in a liquid form tend to work in an anticyclical sense. But this must not be

[1] An exponent of antisaving views disposes of that opinion as "ballyhoo." After recording his belief that the country does not want additional investment and that, if it did, funds could easily be secured by borrowing, he asks: "Why did it (the undivided surplus tax) not produce this sad effect (the slump) sooner?" No serious economist has, to the writer's knowledge, held that the slump was solely caused by this tax. But if timing of effects carries any weight (the reader knows that we attach but limited importance to time sequences), it is nothing short of ideal in this case. The act went into force in June 1936. Its effects were due to show themselves *urbi et orbi* in the first quarter of 1937. And at the end of the second the first symptoms of impending difficulties appeared.

confused with the point which the writer is trying to make and which, in this case, is entirely independent of cash considerations, though it would not be so for other times and countries.

The effect on the combined federal cash account of the method chosen for financing the social security program has been mentioned before. No further attention need, hence, be paid to the money-market and expenditure aspects of the payments into the Old Age Reserve Account and the Unemployment Trust Fund. Independently of this, the tax on pay rolls levied on firms was of course a nonnegligible element in the increase of the total fiscal burden which occurred in 1937.[1] The question of effects raises difficult problems in transference. In a situation in which wage rates are firmly upheld and prices of the products of "big business" not allowed to rise, increase of the tax to the full amount ultimately contemplated may not only produce additional unemployment, but also be sufficient, as comparison with corporate net earnings shows, to cause paralysis in some industries, such as would, for example, enforce the creation of another and much more stringent NRA. But for the time being no major effect can be attributed to this tax taken by itself.

Labor policies reduced investment opportunity—besides employment per unit of output—mainly by forcing up wage rates. We have seen, however, that not all of the increase which actually occurred can be attributed to those policies; and precisely because rising rates were to a considerable extent met by labor-saving rationalization, the effect on investment opportunity was presumably not very great.[2] Costs incident to employing labor were also increased in other ways. And more than elsewhere it is here necessary to define investment opportunity widely and to take account of the less measurable effects of increasing difficulties in operating plants which the growth of a new body of administrative law entails. A major measure of this kind, the National Labor Relations Act (July 5, 1937) was placed on the statute book in the period under survey. As the reader knows, more vigorous use was immediately made of the

[1] The steel industry, for instance (American Iron and Steel Institute; identical concerns), paid for 1937 156.6 millions in federal, state, and local taxes, or about 40 per cent of net earnings or 15 per cent of pay rolls, or about 60 per cent more than in the preceding year. About 37 of the 60 per cent are accounted for by the increase in the pay roll tax.

[2] It will be recalled that as far as meeting rising wages in that way involves additional outlay on plant and equipment, investment opportunity may temporarily be increased. Such facts as that in the steel industry the composite price of products was in July 1938 a little below the 1923 to 1929 average, while average hourly money earnings of labor were higher by 33 per cent must be interpreted in this light. It, nevertheless, remains true that the course of wages was one of the factors that account for that industry's failure to repair its damaged financial structure, as evidenced by the fact (Iron and Steel Institute) that at the end of 1937 its surplus and reserves were still but little more than half of what they had been in 1920.

facilities created by it than is suggested by its actual contents, which keep within the most ordinary lines of labor policy in modern democracies and only develop the principles of earlier legislation, such as the labor clauses of railroad acts, the Clayton Act, certain acts passed during the war, Sec. 7*a* of the recovery act, and other enactments. Official support given to the campaign of the Committee for Industrial Organization and lending to the act a color not naturally its own, must be listed independently. But after the fullest allowance for these and other elements of the case, we shall still be left with the result that labor policies—more precisely, what has actually been done in the field of labor policy—were not, *taken by themselves*, of decisive importance in shaping the business situations of those years.

As regards what we have called industrial policies unfavorable to investment opportunity—or, what economically amounts to the same thing, to action being taken on any "objective" investment opportunity, whether declining or not, that may have been present—two instances will sufficiently illustrate what we mean. First, we have seen reasons to expect that developments in the field of public utilities would be a leading feature of the current, as they had been in the preceding Juglar. We have also seen that, barring federal enterprise, that expectation was not fulfilled. The writer does not see how it could possibly be denied that in this case existing investment opportunity was prevented from having its normal effect, not so much by what was actually done, but by the blanket threat behind it. Expected competition from federal or municipal power plants was a factor in some sectors.[1] The Public Utilities Holding Company Act endangered the American solution of the fundamental problem of power finance. But the decisive element of the situation was that indefinite threat: executives and investors would have had to be completely blind to the political forces that were being marshaled against them, if they had been prepared to take the responsibility for, or to cooperate in, new investment on a large scale. The case thus serves to show not only how unrealistic any theory of investment opportunity is which leaves the political factor out of account, but also how easily the latter may acquire an importance compared with which that of any decline of investment opportunity from reasons inherent to the capitalist process would be negligible, even if it did occur at a significant rate per year.

[1] Even if it had been still more important than it was, this factor would have to be listed with a qualification. The development of new sources of power and their competition with the old ones is, of course, part of our process and not an impediment to it. On principle, it is immaterial by whom the new sources are developed, whether by public or private enterprise. The right of that factor to a place in the list of spokes in the economic wheel rests with the extent to which the federal and municipal works can be expected to be privileged and to be made tools of attack irrespectively of economic (cost-accounting) rationality.

Second, there is nothing surprising in the fact that under the circumstances the no less old hostility against "monopoly power" should have asserted itself again all over the industrial field. But "monopoly" really means any large-scale business. And since economic "progress" in this country is largely the result of work done within a number of concerns at no time much greater than 300 or 400, any serious threat to the functioning of these will spread paralysis in the economic organism to a much greater degree than a similar threat to the corresponding number of concerns would in any other country. No compensation was afforded by the federal government's extreme anxiety not to show hostility to private business in general or to do anything that could have aroused the cry of Government in Business, because the contributions of the favored strata to "progress" and their investments are not only comparatively small but also, to a large extent, induced by what happens in the world of big business. That hostility propelled or facilitated the fiscal and labor policies which we have glanced at above. Beyond these very little was actually done; but much was foreshadowed at various times, even before the monopoly investigation, recently instituted. This may have meant nothing or everything, according to whether or not the threats—no doubt, again indefinite—were taken seriously by those whose decisions they could have influenced. But it should be observed how very much like "liquidity preference owing to vanishing investment opportunity" the behavior would look which would result if they were.

d. It will be seen that none of all the *measures* mentioned under our three headings can, if considered individually, be reasonably held to have played a dominant role in shaping the current Juglar. An easy road thus seems to lead toward the conclusion adopted as a matter of fact by many, if not most, economists, that no explanation can on these lines be derived for the lack of vitality displayed by the economic process during the period under survey, and that investment opportunities must, hence, be vanishing from causes internal to that process, in spite of all we have adduced to the contrary. It is, however, suggested that the following considerations greatly strengthen the case for the adequacy of that explanation.

First, the combined effect of a series of measures unfavorable to investment opportunity can evidently not be evaluated by adding up the effects which each of them would have had in the absence of the others. We have repeatedly met cases of this kind. For instance, the reader will recall that our discussion of the course of German wage rates did not result in anything amounting to proof—or rather that it led us to deny—that this element would have spelled serious disturbance if it had acted alone; but that, since it did not, this was not the relevant question to put. Simi-

larly, we might in the case before us make even larger concessions than the writer would be prepared to justify, to the prevalent tendency to underestimate the effects of any or all the individual measures we have glanced at, and nevertheless have to conclude that their combined effects were adequate to produce the observed result. The individual measures obviously tended to reinforce each other. "Objectively"—*i.e.*, irrespectively of intentions harbored by any individuals[1]—they amounted to systematic attack on investment opportunity all round: it was frontally attacked by direct reduction of revenues—or the operative part of total net revenues—through taxation, which would have been only the more effective if there really had been also an inherent tendency for investment opportunity to shrink; simultaneously, it was attacked in the rear by increasing costs; and both attacks were supplemented by a third—the attack on those traditional methods of management, pricing, and financing in the sphere of "big business" which were associated with the latter's emergence and successes. No doubt, opinions still may in all fairness differ as to the importance both of these combined attacks and of the precise points in the industrial structure that were being attacked. But difference of opinion is not possible about the relevance of the principle of interpretation which the writer is trying to stress.[2]

Second, the mistake involved in trying to arrive at an estimate of combined effects by that process of addition is not more serious than the mistake of confining attention, in evaluating either isolated or combined effects, to the wording of enactments, congressional declarations of policy, and statements of the chief executive. Economists who pride themselves on the practical bent of their researches could really be expected to know that the personnel and methods by which and the spirit in which a measure or set of measures is administrated, are much more important than anything contained in any enactment. We have met with examples above. The events surrounding the National Labor Relations Act will again serve to illustrate that simple truth, particularly if we compare American with English experience in that field: it should be obvious that in the one

[1] It is hoped that the reader will not object to the above statement on the ground that he is quite sure that Mr. X or Mr. Y does not harbor any hostile intentions. If, however, this objection were raised, the writer would not reply by asking how the reader knows that or by pointing out that policies are hardly ever made by the men at or near the top of the official ladder; he would reply that intentions are entirely irrelevant. History is a record of "effects" the vast majority of which nobody intended to produce.

[2] It is neglected to a surprising degree, even in cases in which there is no aversion to the conclusion implied. Authorities on accounting and taxation habitually discuss effects of fiscal, authorities on labor discuss labor policies in isolation, even if their intention is to prove the presence of "injurious" effects, apparently without realizing that they thereby reduce their arguments to exercises in general theory.

case effects on investment opportunity may result which it would be absurd to expect in the other. This already covers part of what we designate by the term Social Atmosphere.

But, third, this atmosphere should also be listed independently as an additional factor in its own right. It is surely not too much to ask economists to realize that behavior in human societies differs from behavior in animal societies or in physical systems, in that it not simply reacts to "disturbances" but to interpretative and anticipative—correct or false—diagnoses of them. Real or supposed drifts and trends may count as much as or more than facts, threats as much as actions, indefinite threats more than specific ones, in creating the psychic environment in which the nation's work has to be done. *We* know that behind those measures, administrative acts, and anticipations there is something much more fundamental, *viz.*, an attitude hostile to the industrial bourgeoisie which is no ephemeral composite of individual circumstances and political exigencies of the day but the product of the same social process that created that bourgeoisie. Businessmen presumably do not hold that theory. But they need not hold any in order to realize that there is in those measures and programs more than there would have been in similar measures and programs 30 years ago. They *are* not only, but they *feel* threatened. They realize that they are on trial before judges who have the verdict in their pocket beforehand, that an increasing part of public opinion is impervious to their point of view, and that any particular indictment will, if successfully met, at once be replaced by another. Again, we may differ in our estimates of the importance both of this factor and of the functions it tends to paralyze,[1] but it should not be overlooked.

Fourth, the effects of all that on investment opportunity—if the reader prefer, on what to the businessman appears as an investment opportunity of a given degree of attractiveness—were greatly enhanced by the suddenness of the change of scene. In order to convince ourselves of this, it is only necessary to reflect that any major change in the relations between

[1] Those are, of course, different things. Concerning the first, the writer believes that observations are available which point to the conclusion that the influence of "atmosphere" on the behavior of entrepreneurs and "capitalists" was considerable but admits that the nature of the case precludes proof and that any attempt at proof by consequences would be circular. Concerning the latter, few people will doubt the importance of those effects if the argument is made to turn on aversion to investing. But difference of opinion would at once appear if it were suggested that effects of the hostile atmosphere can also consist in impairing the efficiency of entrepreneurs and managers. For, as pointed out in Chap. XIV, Sec. C, 2, it is part of the creed of the day that those people who have any reason to feel threatened do not fill any function anyhow. That this is an article of creed and not based on any familiarity with the facts of business practice any teacher of economics can easily establish for himself: the belief is present at a stage in life in which nobody can have acquired an idea of what it means to run, let alone create, a large-scale concern.

the individual and the state, including any major shift in favor of the latter of the shares in total private revenue earned, involves changes in the fundamental habits of mind, the attitudes to life, and the valuations at least of those who are immediately concerned. The sociology of this need not detain us. But as a matter of history it is clear that such changes usually come about by small installments and as the result of a slow process of education, which must be far advanced for codification of principles into a new body of law to be a success. We observe, in fact, that the modern principles of English taxation took about 30 years to develop and "sink in," and that the beginning of the modern system of English social policies dates back to at least the eighties of the nineteenth century, when the ideas of Chamberlain and Dilke spread dismay among their colleagues in Gladstone's second administration.[1] The English bourgeoisie was thus given time to acclimatize. This is why, as the reader will recollect, we have not in the English case used the factors under discussion in any explanation of the features of any individual Juglar phase, or of any short-run phenomena in general, but only in our explanation of long-run contours and levels.

But in this country there was no such preparation; hence, there was a different reaction.[2] Barring the war intermezzo, there was nothing except the feeling against "monopolies" and utilities to indicate any resentment, and that was of the middle-class type only and easy to keep in hand. On the whole, the businessman's moral world was the nation's moral world right up to the crisis. And for nearly two years the democratic administration, though doing many things which were felt to be "unorthodox" by its friends as well as by its foes—measures actually were, as we have seen, not so very much out of keeping with American tradition—in no way displayed the attitude that we are discussing now but, on the contrary, signs of a thoroughly bourgeois attitude. The change in policy dates only from 1934–1935. It therefore followed rather than preceded the radicalization of the public mind, which in consequence of the crisis had occurred between 1930 and 1933 as radicalization in countries in which authority is associated with military values will occur in consequence of military defeat.

The analogy with the German breakdown in 1918 suggested by the last remark indicates the line on which we should explain how and why a

[1] It would, however, be more just to date from the preceding Disraeli administration and, in another sense, from the forties (Lord Ashley).

[2] Recognition of this element is often implied in current talk about "lack of confidence," "strike of capital," and a "government-made depression." These and similar phrases are objectionable on several grounds and indicative of naïve resentments rather than of correct diagnosis, but in the impression they are intended to convey there is an element of truth.

secular process, after having failed to assert itself to any practically significant extent for fully forty years after the closing of the frontier, then suddenly became the dominant factor of the political situation. In doing so, we should no doubt have to go into many circumstances peculiar to the American environment in general and to American politics in particular, in order to understand the details of the change in attitude and of the resulting political pattern. But the fact, the broad causes, and the effects on business behavior are sufficiently obvious to establish our point without any analysis of details.[1] There are, however, two aspects which cannot be passed by.

On the one hand, we have insisted above on the importance of personnel and of methods of administration. New measures as well as new attitudes must be implemented by a skilled civil service. In any case they set a difficult task to even the most experienced bureaucracy. As a rule, however, reforming governments enjoy at least the advantage of having that indispensable tool ready at hand—in most historical instances it grew up along with the tendencies which they represent. This happened, for example, in England, while in Germany the regime of 1918 was able to take over from its predecessor both an excellent civil service and a state-broken public. In this country a new bureaucracy had suddenly to be created. However good part of the material on which it was necessary to draw, and however creditable, considering the circumstances, the performance of a great many individuals and groups may have been, there was no experience, no *esprit de corps*, no clear idea even of what civil service is and what it can and cannot do. No less inexperienced—to the point of not seeing the fundamental administrative problems at all—were the men in whose hands that unwieldly apparatus was put. The tact, the reserve, the *savoir-faire* which are second nature to a seasoned bureaucracy were alike absent. Enthusiastic individuals and groups developed their own policies and tried to push them with Congress and the public, scornfully refusing counsels of self-denial and patience. In consequence, that sense of indefinite threat was immeasurably increased. English policies may be felt to be equally or more oppressive, but they are never aggressive: spectacular manifestations of

[1] Some of the economic causes of the sudden change of scene have, however, been pointed out previously, among them the agrarian situation, the last epidemic among banks, the stock exchange crash, unemployment. The main factors which are and must remain absent from our sketch are the structure and technique of American politics and the role played by the "intellectuals." A complete analysis would also have to take account of random configurations, of which one has been mentioned, *viz.*, the fact that a presidential election occurred a few months after the lower turning point, exactly at the time at which the sociopsychological "hangover" of the depression should be at its maximum.

aggressiveness proceed only from quarters that are—by *all* parties[1]—firmly held in check, and never from members of the public service. The methods of the latter may be likened to deerstalking and tend to minimize trouble and disturbance caused by any given measure. Administrative methods in this country tend to maximize them and are more like those of the fox hunt—and this makes a lot of difference.

On the other hand, sudden change, unless of the Russian type, is of necessity imperfect change. It impinges upon a set of economic and political conditions which are very unequally ripe. This puts advocates and opponents of new departures in false positions, adulterates arguments, and makes it impossible to face issues squarely. In England the question of the employment of nonunionized labor, for instance, having been allowed to mature, is now one of secondary importance. In this country it cannot even be frankly put, yet it is at the bottom of much strategy and struggle which, precisely because the issue is not ripe for decision, must be expected to remain for some time a source of difficulties and losses to all parties concerned. But the standard instance is the policy followed with respect to public utilities. Here, if anywhere, there was an all but united public opinion, united at least in its hostility to the private interests involved. Moreover, European experience suggestively pointed toward nationalization of power production and transmission, which could have been carried without any shock to "business confidence" if the interests of investors had been fully safeguarded, and with but a sharp and short one if they had been sacrificed—always provided that there were no clenched fists or indeterminate threats of other nationalizations to follow. Yet it was not even attempted.[2] The clenched fists and indeterminate threats were all the more in evidence, however, and the result was, as we have seen, to paralyze one force without substituting another. This will always result from raising issues before they can be effectively dealt with and illustrates what above has been described as deadlock. To deny that this impairs the efficiency of the economic engine or, if we retain the slogan, reduces investment opportunity, would seem to the writer unreasonable.

[1] The official leaders of the Labor party, hence, frequently find themselves described as what in plain English would have to be called dunces and traitors. But it does not matter, and everyone knows that action upon the views of radical wings would speedily end in discomfiture.

[2] A move toward encouraging municipalities to acquire the works and distributive systems that serve them has recently been made. It only illustrates our point, both by its weakness and by its timing. Another illustration is afforded by the practice of the PWA of facilitating the construction of distribution systems duplicating the privately owned ones in the sector of the TVA by charging less than cost and by lending the remainder at low rates to municipalities.

If the above considerations are given their proper weight, there should not be left much doubt as to the adequacy of the factors external to our process[1] to account both for the disappointing features in the current Juglar and for the weakness of the response of the system to government expenditure, in particular for the failure of the latter to affect investment and employment more than it did. It cannot be proved in the sense in which a mathematical theorem can, that the balloon shriveled, not from causes inherent to its structure, but because the air was being sucked out of it. It is, however, highly plausible and, after all, only what, if we clear our minds of cant, we should expect to occur in transitional stages. Prognosis would, in this country more than in any other, have to take account of the likelihood that there will be intermissions or even reversals; of the effects of "acclimatization"; and of the fact that, if our schema is to be trusted, recovery and prosperity phases should be more, and recession and depression phases less strongly marked during the next three decades than they have been in the last two. But the sociological drift cannot be expected to change.

[1] Let us add, however, for the last time, "in the narrow sense adopted for the purposes of this book." In a wider sense those factors and the mentality or moral code behind them are not external to the process of economic evolution but part of it, a part as essential and unavoidable as any other and, in particular, as any "objective" shrinkage of investment opportunity could be. The above argument would, hence, be completely misunderstood if it were taken to imply that, "only" politics or humors being the matter, pristine vigor of the capitalist process could easily be restored at the next swing of the electoral pendulum. As far as that goes, the practical implications of our diagnosis do not differ much from those of the theory of vanishing investment opportunity in its usual acceptance. Even government spending as a permanent policy could be rationally defended on our diagnosis: the pattern resulting from the action of inhibiting factors would in all respects be similar to the pattern envisaged by the saving-investment theory; it would display the same lack of resilience and the same tendency toward subnormal quasi-equilibria; in particular, it would always produce or reproduce extensive unemployment. Therefore, government spending would, given the general will to conserve those inhibiting factors, always suggest itself as a remedy for shortrun difficulties each application of which would impose, under penalty of breakdown, the application of the next dose. Fear of such breakdowns may in the end become the dominant motive even among those who on principle are most strongly opposed to spending policies.

APPENDIX

Description of the Statistical Material Embodied in the Charts

CHART I. ARITHMETIC SCALE

Three sine curves with periods respectively of 684, 114, and 38 months (or 57, 9½, and 3⅙ years) and with amplitudes roughly proportional to the periods, *i.e.*, in the relation of 18, 3, and 1, have been plotted separately. The fourth curve presents their sum.

$$(1)\quad a = 18 \sin \left(\frac{360}{684} t\right)^\circ$$

$$(2)\quad \beta = 3 \sin \left(\frac{360}{114} t\right)^\circ$$

$$(3)\quad \gamma = \sin \left(\frac{360}{38} t\right)^\circ$$

$$(4)\quad y = 18 \sin \left(\frac{360}{684} t\right)^\circ + 3 \sin \left(\frac{360}{114} t\right)^\circ + \sin \left(\frac{360}{38} t\right)^\circ$$

CHART II. ARITHMETIC SCALE

The graph represents the derivative (time rate of change) of the sum of three sine curves with periods of 684, 114, and 38 months.

CHART III. ARITHMETIC SCALE

(1) Average Railroad Revenue Freight Loaded. United States. Weekly figures.

(2) Four-item Moving Average of Three-item Moving Average of Two-item Moving Average of Series (1).

(3) Superseasonal Normal. This is a freehand curve drawn through the inflection points of the moving average curves.

(4) Deviations of Series (2) from Series (3) multiplied by the "Inflation Factor."

For a discussion of the Frisch method in general the reader is referred to Chap V. For a discussion of the Inflation Factor *cf.* Horst Mendershausen, Annual Survey of Statistical Technique: Methods of Eliminating Changing Seasonal Fluctuations, *Econometrica*, vol. V, no. 3, July 1937, p. 244.

Let

$$I = \text{Inflation Factor}$$

Then

$$I = \frac{\sin 2\lambda}{2 \sin \lambda} \cdot \frac{\sin 3\lambda}{3 \sin \lambda} \cdot \frac{\sin 4\lambda}{4 \sin \lambda}$$

where

$$\lambda = \pi \cdot \frac{D}{P}$$

and

$$p = \text{twice the time distance between normal points}$$

and

$$D = 1, \text{ the time unit in which } p \text{ is measured.}$$

CHART IV. RATE OF PERCENTAGE CHANGE OF PRICES. ARITHMETIC SCALE

The rate of percentage change for each series is computed by applying to the logarithms of the indices the formula

$$D_k = \tfrac{1}{2}({}_1\Delta_k + {}_1\Delta_{k+1}) - \tfrac{1}{12}({}_3\Delta_{k+1} + {}_3\Delta_{k+2})$$

for annual indices or the formula

$$D_k = \tfrac{2}{3}({}_1\Delta_k + {}_1\Delta_{k+1}) - \tfrac{1}{3}({}_3\Delta_{k+1} + {}_3\Delta_{k+2})$$

for quarterly indices. The antilogs of the D items minus 100% give the rates of percentage change.

The rate-of-change formulae are applied to logs rather than absolute figures for reasons analogous to those leading to the use of logarithmic rather than arithmetic scales on charts. The importance of a change in the series is, hence, made to depend on the relative (percentage or geometric) movement.

(1) United States. Wholesale Prices. 1842–1913. The data have been taken by permission from Prices by G. F. Warren and F. A. Pearson, published by John Wiley & Sons, Inc., New York, pp. 12–13 (see also the discussion in the text and in the note on p. 14), and built into quarterly 12-month averages of the monthly items.

(2) Germany. Wholesale Prices. 1879–1913. For the years from 1879 to 1902 it has seemed best to use the monthly index compiled by Otto Schmitz, Die Bewegung der Waarenpreise in Deutschland von 1851 bis 1902, Berlin, 1903. This index is an unweighted arithmetic average of the prices, published since 1879 by the Imperial Statistical Office, of 29 articles, raw materials almost entirely. From 1898 to 1913 the author has, by permission, used the monthly index (average 1898–1913 = 100) of 10 commodities (cotton yarn, cotton cloth, raw silk, wool (2), calf skins, pig iron (2), lead, tin) constructed by E. W. Axe and H. M. Flinn, An Index of Business Conditions for Germany, 1898–1914, *Review of Economic Statistics*, vol. VII, 1925, pp. 282-285. Quarterly 12-month averages of the two indices were spliced together, bases being shifted so as to make them coincide as nearly as possible from 1898 to 1902. At the time this seemed the best thing to do. In his later work the writer availed himself of the new and incomparably more satisfactory index of the Institut für Konjunkturforschung, leaving however the chart as it was.

(3) United Kingdom. Wholesale Prices. 1850–1913. From 1850 to 1870 the annual Sauerbeck index (Prices of Commodities and the Precious Metals, *Journal of the Royal Statistical Society*, vol. XLIX, September 1886, p. 648) was used with the permission of the Royal Statistical Society. This index is a simple average (1867–1877 = 100) of 56 wholesale prices, almost entirely of raw materials: 22 foods, 8 minerals, 11 textiles, and 15 other materials. Cotton and other articles are counted more than once. From 1870 to 1885 recourse has been had to the annual Board of Trade Index (see Cmd. 6955, 1913, p. 308) which is a weighted aggregate (1900 = 100) of the prices of foods and raw materials, the articles being weighted according to the estimated consumption during the years 1881 to 1890. From 1885 to 1913 quarterly 12-month averages were computed from the monthly index of the editor of the Statist (*cf.* Wholesale Prices of Commodities in 1921, *Journal of the Royal Statistical Society*, vol. LXXXV, March 1922, p. 275), a continuation of Sauerbeck's index. The three indices were spliced together graphically on the basis of overlapping years.

CHART V. BRITISH PREWAR PULSE. LOG SCALE

(1) Interest Rate. 1824–1913. From 1824 to 1850 use was made by permission of the series of quarterly average discount rates in London (best bills) as published by Norman

J. Silberling in British Prices and Business Cycles, *Review of Economic Statistics*, Supplement, vol. V, 1923, p. 257 (see footnote 2, p. 242). For the most part these are the rates which were charged by the firm of Overend, Gurney & Co. The data were built into four-quarter moving totals. From 1850 to 1857 quarterly 12-month moving averages of the monthly average rates charged on best bills by Overend, Gurney & Co. have been computed from the figures in Parliamentary Papers, 1857, vol. X, Part I, p. 464. From 1858 to 1861 the quarterly average market rates on high-class bills were taken from R. H. I. Palgrave, Bank Rate and the Money Market, p. 33, by permission of the publisher, John Murray. From 1862 to 1913 the curve has been based on the figures of the Lombard Street rate, at the beginning of each month, on two or three months' bills as published in the *London Economist's Annual Commercial History and Review*. The four series were spliced by means of overlapping periods.

(2) Production. 1785–1913. This is Dr. W. Hoffmann's annual index of total industrial production, *cf.* Ein Index der industriellen Produktion für Grossbritannien seit dem 18. Jahrhundert, *Weltwirtschaftliches Archiv.*, vol. XL, 1934 II, pp. 396–398, the use of which has been kindly permitted by the author and the editor, Professor Predöhl. In 1785, 10 commodities are represented. See that article for commodities and weights. Most of the 50 series finally included begin about 1800. It is believed that from that year on approximately two-thirds of English industry is covered. For purposes of weighting, the index is broken up into six shorter periods and also into broad industrial groups. Indices are separately computed for producers' goods and consumers' goods. Foods, textiles, materials, chemicals, iron and steel and machine industries, mining, transportation, and electricity are the main divisions covered. The reader's attention is invited to Dr. Hoffmann's recent book on the subject, Wachstum und Wachstumsformen der Englischen Industriewirtschaft.

(3) Prices at Wholesale. 1785–1913. From 1785 to 1850 Mr. Norman J. Silberling's quarterly index (*Review of Economic Statistics*, Supplement, quoted above) has been used by permission. It is a simple geometric mean of the prices of 35 commodities, mostly raw materials (1790 = 100). Four-quarter moving totals were plotted. From 1850 on, the series are as described under Chart IV (3). All splicing was done on the basis of overlapping years.

(4) Deposits plus Circulation. 1880–1913: deposits in joint stock and private banks in Great Britain (exclusive of the Bank of England). The circulation is total note circulation in Great Britain at the beginning and middle of each year. Both series were taken from the *Economist's* Reports of Joint Stock Banks of the United Kingdom.

CHART VI. UNITED STATES PREWAR PULSE. LOG SCALE

(1) Deposits plus Circulation. 1870–1913. The data are call-date figures, five each year, for "individual deposits" and "notes outstanding" of all national banks outside New York City, taken by permission of the *Review of Economic Statistics* from A. A. Young, An Analysis of Bank Statistics for the United States, Harvard University Press, Cambridge, Mass., 1928, pp. 8–13. A five-item moving total centered on the third item has been plotted. "Individual deposits" are individual deposits as reported by the Comptroller of the Currency minus clearing-house exchanges. They do not include government or interbank deposits. Before Apr. 26, 1900, however, some banks counted deposits due to savings banks as individual deposits. "Notes outstanding," of course, do not, except very imperfectly, indicate variations in national bank notes in circulation.

(2) Interest Rate. Commercial paper rate. 1831–1913. The monthly data were taken, with the permission of Colonel Leonard P. Ayres, from his chart Business Activity and Four Price Series, *Cleveland Trust Company Bulletin* for July 1932. The sources quoted by Colonel Ayres are: from 1831 to 1860, E. B. Bigelow, The Tariff Question, Boston,

1862; from 1861 to 1865, J. G. Martin, Seventy-three Years' History of the Boston Stock Market, Boston, 1871; and from 1866 to 1913, W. L. Crum, Cycles of Rates in Commercial Paper, *Review of Economic Statistics*, vol. V, January 1923, p. 28. Quarterly 12-month totals of the monthly items were plotted.

(3) Output of Manufacturing and Mining. 1863–1913. The curve is plotted on annual figures taken by permission from Professor W. M. Persons, Forecasting Business Cycles, published by John Wiley & Sons, Inc., New York. This index is a combination of two indices given separately; both are weighted arithmetic averages, with 1909–1913 = 100 as base, manufacturing being given a weight of 7/8 in the combination. See W. M. Persons, *op. cit.*, pp. 172–173, for a description of the index and its two components.

(4) Wholesale Prices. 1831–1913. Monthly. See Chart IV (1). Quarterly 12-month averages were plotted.

(5) Crop Production. 1870–1913. Professor W. M. Persons' annual index, a weighted arithmetic average (1909–1913 = 100). For description see *op. cit.*, pp. 171–172. Acknowledgements are again due to John Wiley & Sons, Inc., New York.

CHART VII. GERMAN PREWAR PULSE. LOG SCALE

(1) Wholesale Prices. 1879–1913. Monthly. See Chart IV (2). Quarterly 12-month averages.

(2) Industrial Production (Manufacturing and Mining). 1860–1913. Annual. The index of the Institut für Konjunkturforschung, see Rolf Wagenführ, Die Industriewirtschaft, *Vierteljahrshefte zur Konjunkturforschung, Sonderheft* 31, 1933, p. 58. The index is computed from 57 series weighted according to the number of employees and installed horsepower in 1907. The author's thanks are due to the President of the Institut, Professor Wagemann, for permission to use it.

(3) Berlin Market Discount Rate. 1868–1913. From 1868 to 1898 the monthly data used are those published by the *London Economist's Annual Commercial History and Review*. From 1899 to 1913 monthly figures were taken from E. W. Axe and H. M. Flinn, see quotation under Chart IV (2). They are averages of the high and low for the first week of each month. Quarterly 12-month averages were computed.

(4) Note Circulation and Credit Accounts of Joint Stock Banks. 1884–1913. Annual. *Kreditoren* plus *Notenumlauf* for the end of each year from *Der Deutsche Ockonomist*, vol. XXIV, 1906, pp. 464 and 466; and vol. XXXII, 1914, pp. 538 and 580.

CHART VIII. NINE-YEAR MOVING AVERAGES OF PRICES. LOG SCALE

The following series were put in the form of annual averages from which were computed 9-year moving averages centered on the fifth year.

(1) United Kingdom. Wholesale Prices. 1779–1913. For description of material see above under Chart V (3).

(2) Germany. Wholesale Prices. 1851–1913. From 1851 to 1902 the index is that of Otto Schmitz, see Chart IV (2), which until 1879, when the index of the Imperial Statistical Office begins, is an unweighted average of the Hamburg prices of 24 raw materials. For 1903–1912 figures were taken from the British Board of Trade Enquiry into Working-class Rents and Retail Prices, etc., 1912, Cmd. 6955, 1913, p. 356, a continuation of Schmitz's index.

(3) United States. Wholesale Prices. 1797–1913. This is the series described in Chart IV (1).

CHART IX. ARITHMETIC SCALE

The original data (dots) are annual wholesale prices in the United States, 1790–1920, from the *U. S. Department of Agriculture Bulletin* 999, p. 2, the 5-year average, 1909–1914, being equal to 100.

(1) A 3-year on a 2-year moving average (graphically determined).
(2) Curve through inflection points of 10-year cycle.
(3) Curve through inflection points of 22-year cycle.
(4) Curve through inflection points of 50-year cycle.

CHART X. PERCENTAGE DEVIATIONS OF PRICES FROM 9-YEAR MOVING AVERAGE. ARITHMETIC SCALE

The annual averages of the series used for Chart VIII were divided by the corresponding items of their 9-year moving averages and expressed as percentages minus 100.

CHART XI. UNITED STATES PRICES. 1840–1913. ANNUAL. LOG SCALE

(1) Consumers' Goods. Wholesale. From 1840 to 1890 the index (1890 = 100) was computed by M. J. Fields from the data contained in the Aldrich report of 1893 (Committee of Finance, United States Senate, Fifty-second Congress, Second Session, *Report* 1394, Part I, pp. 91-94). It is a simple arithmetic average of the three groups: (1) food, (2) clothing, and (3) house furnishings. From 1890 the index of the *U. S. Bureau of Labor Statistics Bulletin* 284, pp. 48–49, has been used. See also *Bulletin* 149. The two indices were spliced together.

(2) Foods. Wholesale. The curve is based on figures taken by permission from G. F. Warren and F. A. Pearson, Prices, published by John Wiley & Sons, Inc., New York, pp. 25–27. 1910-1914 = 100.

(3) Household Furnishings. Wholesale. Same source as (2).

(4) Textile Products. Wholesale. Same source as (2).

(5) Producers' Goods. Wholesale. From 1840 to 1890 the index (1860 = 100) was computed by M. J. Fields from data in the Aldrich Report (see Series (1)). It is a simple arithmetic average of two groups, metals and implements (excluding pocket knives) and lumber and building materials. From 1890 to 1913 the index is the one published by the *Bureau of Labor Statistics Bulletin* 284 [see Series (1)]. The two indices have been spliced.

(6) Metals and Metal Products. Wholesale. Same source as (2).

(7) Basic Commodities. Wholesale. Same source as (2). This index includes the prices of 30 basic commodities, farm products, minerals, textiles, and the like.

CHART XII. PIG IRON CONSUMPTION. ANNUAL. LOG SCALE

(1) United Kingdom. 1854–1913. The original sources are the Annual Reports on Mines and Quarries, issued by the Home Office and the Annual Statements of the Trade of the United Kingdom. The series was taken from Parliamentary Papers, Cmd. 2145, pp. 24–25, and the Seventeenth Abstract of Labour Statistics, p. 44. It is also given by A. C. Pigou, Industrial Fluctuations, 2d ed., London, 1929, p. 386.

(2) United States. 1855–1913. From 1855 to 1870 this series was constructed by E. M. Hoover from production figures of the American Iron and Steel Institute and imports for calendar years. These import figures were obtained by interpolation between fiscal-year import totals as given in the 1871 *Annual Report* of the Institute. Exports and changes in stocks were ignored; but as late as 1870–1871 the total United States exports of pig iron were only 3,480 gross tons or 0.02 per cent of the 1870 production. From 1871 to 1913 the series of estimates of the American Iron and Steel Institute, published in its Annual Statistical Reports and based on data for production, imports, exports and (since 1874) net change in stocks held was used with its permission. Data for 1871 to 1873, being given in net tons, were converted to gross tons.

(3) Germany. 1860–1913. The series (also given by S. Kuznets, Secular Movements in Production and Prices, pp. 469–470) is from the Statistisches Jahrbuch für das Deutsche

Reich. The figures have been converted from metric tons (2,205 lb.) to gross tons (2,240 lb.).

CHART XIII. RATE OF PERCENTAGE CHANGE OF PIG IRON CONSUMPTION. ANNUAL. ARITHMETIC SCALE:

The rates of percentage change of the three series plotted on Chart XII were calculated by the use of the formula explained in the description of Chart IV.

CHART XIV. UNITED STATES. LOG SCALE

(1) Cotton Production. 1840–1911. The figures (for the "cotton year") were taken from Circular 32, U. S. Department of Agriculture, The Cotton Crop of the United States, 1790–1911. Linters are included from 1899 on.

(2) Railway Freight Ton-miles. 1852–1913. Annual. From 1852 to 1887 the series was taken by permission from Mr. Carl Snyder's Business Cycles and Business Measurements, p. 238 (see also note, p. 39), published by The Macmillan Company, New York, 1927. This series gives net ton-miles of freight carried on Class I railroads estimated from the figures of the principal lines as reported in Poor's Manual. From 1888 to 1913 the series was taken from Railway Statistics of the United States of America, 1916, p. 99, prepared by S. Thompson, Bureau of Railway News and Statistics, Chicago, 1917. Switching and terminal companies are included to 1908. These data refer to Class I, Class II, and Class III railroads and fiscal years.

(3) Coal Production (Anthracite and Bituminous). 1839–1913. Annual. This index (1926–1930 = 100) was taken by permission from G. F. Warren and F. A. Pearson, The Physical Volume of Production in the United States, *Cornell University Agricultural Experiment Station Memoir* 144, Ithaca, 1932.

(4) Cotton Consumption. 1862–1913. Annual. The figures are from the Statistical Abstract and refer to "cotton years." (See *Census Bureau Bulletin* 166, p. 57).

(5) Building Permits Index. 1874–1913. Annual. This series (also used by A. F. Burns, Production Trends in the United States since 1870, pp. 302–303) has been compiled by Mr. Carl Snyder and published (from 1882 on) in his book on Business Cycles and Business Measurements, p. 275. The writer's acknowledgments of permission to use it are due to Mr. Snyder and The MacMillan Company. It represents an index of building permits in from one to seven cities (seven since 1895) divided by an index of changes in costs of construction. The item for 1879 (not given by Mr. Snyder) was interpolated by referring to the behavior of pig iron production which closely paralleled the deflated building-permits index at that time. The assumption was that the ratio of $^{1878}/_{1879}$ to $^{1879}/_{1880}$ was the same in the two series.

(6) Interest Rate. See Chart VI (2).

CHART XV. INDUSTRIAL PRODUCTION. ANNUAL. LOG SCALE

(1) United States. See Chart VI (3).

(2) Germany. See Chart VII (2).

(3) Great Britain. See Chart V (2).

CHART XVI. RATE OF PERCENTAGE CHANGE OF INDUSTRIAL PRODUCTION. ANNUAL. ARITHMETIC SCALE

See Chart XV for the series used and Chart IV for the formula.

CHART XVII. PRODUCTION (AND CONSUMPTION). ANNUAL. LOG SCALE

(1) United States. Producers' Goods. 1870–1913. This index of the production of capital equipment has been constructed by E. M. Hoover. 1890–1900 = 100. It is a

weighted arithmetic average of the outputs of iron ore (14 per cent), zinc (2 per cent), lead (4 per cent), copper (13 per cent), natural gas (5 per cent), cement (2 per cent), rails (3 per cent), steel ingots and castings (31 per cent), pig iron (12 per cent), coke (5 per cent), ships (6 per cent), locomotives (3 per cent). The weights were based approximately on value added by manufacture or on value of product (average of 1890 and 1900).

(2) Germany. Producers' Goods. See above, Chart VII (2).

(3) Great Britain. Producers' Goods. 1860–1913. See above Chart V (2). For 1785 this index covers only coal, copper ore, copper, tin. Iron and steel products, machinery, etc. are included from 1787. But in the period for which it has been charted, coverage extends to nine mining, two iron, steel and machine industries, six nonferrous metal and metal goods, three chemical, one electricity, and one rubber series.

(4) United States. Consumers' Goods. 1867–1913. This index of consumption of nondurable consumers' goods has been compiled by E. M. Hoover. 1867–1914 = 100. Weights are roughly proportional to the values *consumed* (average of 1880, 1890, 1900, and 1910). The commodities included are sugar (16 per cent), coffee (7 per cent), tea (1 per cent), wine (1 per cent), malt liquors (17 per cent), spirits (9 per cent), tobacco (18 per cent), and wheat flour (31 per cent).

(5) Great Britain. Consumers' Goods. 1860–1913. See above, Chart V, (2). For 1785, the index covered cotton yarn, woolen cloth, linen, malt, and paper; for 1787, also, woolen yarn, silk, and sugar. In the period for which it has been charted, coverage extends to six textile, eight food, drink, and tobacco, two leather, two paper, one lumber, and two chemical series.

(6) Germany. Consumers' Goods. See above, Chart VII, (2).

(7) Series (1) divided by Series (4).

(8) Series (3) divided by Series (5).

(9) Series (2) divided by Series (6).

Series (7), (8), and (9) are plotted so that the average ratio for the whole period is represented by the "normal," or 100 per cent, line.

CHART XVIII. UNITED STATES. ANNUAL. LOG SCALE

(1) Nondurable Consumers' Goods. See Chart XVII (4).

(2) Crop Production. See Chart VI (5).

(3) Production of Capital Equipment. See Chart XVII (1).

(4) Basic Production (excluding "products of the soil"). 1870–1913. This is Mr. Carl Snyder's index taken by permission from G. F. Warren and F. A. Pearson, The Physical Volume of Production in the United States, *Cornell University Agricultural Experiment Station Memoir* 144, Ithaca, 1932, pp. 63–64. It includes coal, pig iron, copper, zinc, tin, lead, steel, silver, petroleum, and nickel.

CHART XIX. GERMAN PREWAR PULSE IN RATES OF PERCENTAGE CHANGE. ARITHMETIC SCALE

For a description of the series see Chart VII. For the method of computing the rates of percentage change see Chart IV. The rate of percentage change of the discount rate is charted on a scale one-tenth as large as that used for the other curves.

CHART XX. INTEREST RATES AND UNEMPLOYMENT PERCENTAGE. LOG SCALE

(1) United States. See Chart VI (2).

(2) Great Britain. See Chart V (1).

(3) Germany. See Chart VII (3).

(4) Great Britain. Unemployment Percentage. 1851–1913. The series was taken by permission from A. C. Pigou, Industrial Fluctuations, published by Macmillan & Company, Ltd., London, 1st ed., 1927, pp. 353–354. The figures represent the trade unions' unemployment percentage, as published in British and Foreign Trade and Industry (Second Series), Cmd. 2337, pp. 89–92, and the Seventeenth Abstract of Labour Statistics, p. 2. Persons on strike, or locked out, sick, or superannuated are excluded. The percentages for some of the earlier years were partly computed from expenditure on unemployment benefit.

CHART XXI. UNITED STATES INDIVIDUAL PRICES DIVIDED BY THE GENERAL PRICE LEVEL. ANNUAL. LOG SCALE

(1) Wheat. 1866–1913. Average farm price per bushel, taken from the Department of Agriculture, *Yearbook of Agriculture*, 1914, p. 522.

(2) Rubber, Para. 1856–1913. From 1856 to 1889 the July items from the Aldrich Report [see Chart XI (1)] Part II, pp. 291–292. From 1890 to 1913, figures of the Bureau of Labor Statistics, *Bulletin* 149, p. 175.

(3) Petroleum, Crude, Barreled. 1862–1913. From 1862 to 1892 the July items from the Aldrich Report, Part IV, pp. 1835–1836. These are monthly averages from 1862 to 1873 except for the year 1867. From 1890 to 1913 figures of the Bureau of Labor Statistics, *Bulletin* 390, pp. 134–135: annual average (Pennsylvania) price relatives on the base 1913 = 100. The items up to 1890 were shifted to the same price relative basis.

(4) Bituminous Coal. 1857–1913. From 1857 to 1891 the July items from the Aldrich Report, Part II, p. 178. From 1890 to 1913 annual average price relatives (1913 = 100, of "Georges Creek," f.o.b. New York harbor for 1890 to 1912 and "Pocahontas" mine run, f.o.b. Norfolk, Virginia, for 1913) from the Bureau of Labor Statistics, *Bulletin* 390, pp. 130–131. Items before 1890 were shifted to the same price relative basis.

(5) Bessemer Steel Rails. 1867–1913. From 1867 to 1889, as published in the Aldrich Report, Part II, p. 215. From 1890 to 1913, figures of the Bureau of Labor Statistics, *Bulletin* 149, p. 149.

(6) Anthracite Coal, *Stove*. 1840–1913. From 1840 to 1891 July items from the Aldrich Report, Part II, p. 177. From 1890 to 1913 figures of the Bureau of Labor Statistics, *Bulletin* 390, pp. 126–127 ("New York, Tidewater").

(7) Copper, Ingot. 1840–1913. From 1840 to 1889 July items from the Aldrich Report, Part II, p. 185. From 1890 to 1913 annual average price relatives, 1913 = 100 from the Bureau of Labor Statistics, *Bulletin* 390, p. 150 (up to 1907, "lake," and after, "electrolytic" copper). Earlier items were shifted to the same price relative basis.

(8) Railroad Freight Receipts. 1852–1913. Average freight receipts per ton-mile. From 1852 to 1892 an average of data for a varying number of railroads given in the Aldrich Report, Part I, pp. 615–617. From 1889 to 1913 average for years ending June 30, published by the Interstate Commerce Commission, *Annual Report on the Statistics of Railways of the United States*. The two series were spliced together. The 1908–1912 figures are not strictly comparable with the rest, because they include returns from switching and terminal companies.

(9) Pig Iron, No. 1 Anthracite Foundry. 1844–1913. From 1844 to 1890 the data were taken by permission from J. M. Swank, History of the Manufacture of Iron in All Ages, Philadelphia, 1892, p. 514. From 1890 to 1913 the figures of the Bureau of Labor Statistics, *Bulletin* 390, pp. 138–139, have been used.

Each of the above series was divided by the wholesale price index, see Chart IV (1). Gold or paper price indices were used according to the nature of the individual price quotations.

CHART XXII. BRITISH SHIPPING. LOG SCALE

(1) Total Tonnage in Existence in the United Kingdom, equal to steam net tons plus one-third of sail net tons from the Statistical Abstracts of the United Kingdom. The increase in 1914 must be discounted because the provisions of the Merchant Shipping Act of 1907 became fully operative on Jan. 1 of that year. From 1923 on, the Irish Free State is excluded. Data are plotted as of ends of years.

(2) Annual Increase in Total Tonnage. First differences of series (1) plotted in the middle of each year.

(3) Shipbuilding in the United Kingdom. Net steam tonnage plus one-third of sail tonnage. Plotted as of midyear. Warships built for foreign governments are included from 1870 to 1888, but from 1886 on there is another series which excludes them. The two series were spliced. Both are from Statistical Abstracts for the United Kingdom. In 1897 the engineers' strike put a stop to all construction.

(4) Interest Rate. See Chart V (1).

(5) Price of "New, Ready, Cargo Steamer," 7,500 tons. Quarterly. This series was taken by permission from *Fairplay's Weekly Shipping Journal*, vol. CXXXIV, Jan. 10, 1935, p. 102.

(6) Freight Rate Index. Annual. This index was made up by splicing together indices from four sources on the basis of overlapping years.

Board of Trade figures were used from 1884 to 1903.

C. K. Hobson in his Export of Capital (London, 1914), p. 182, continued the Board of Trade Index from 1904 to 1912.

An index from 1884 to 1924 was taken from F. C. James, Cyclical Fluctuations in Shipping and Shipbuilding Industries (University of Pennsylvania thesis, 1927), p. 78. This index was compiled by Dr. Isserliss, Statistician to the Chamber of Shipping, London, and was used with his permission and that of F. Cyril James. It is based on E. A. V. Angier's figures of ocean freights published annually in the statistical number of *Fairplay's Weekly Shipping Journal* and in his Fifty Years of Freights, 1869–1919, "Fairplay," London, 1920. The figures represent a weighted average of freight rates to and from England for the whole of each year, and do not give a complete picture of the years during which freight rates changed. The engineers' strike in 1897 affected rates and so did, of course, the Spanish American and South African wars. In 1915 rates were fixed by government, and in 1917 all tonnage was requisitioned.

From 1920 to 1934 an index on the base 1920 = 100 was taken from *The Statist*, London, Oct. 29, 1921, and later numbers. This index has also been compiled by Dr. Isserliss. It is a geometric mean of tramp quotations for eight routes to and from the United Kingdom. The more important routes are represented by more than one quotation.

CHART XXIII. UNITED STATES. LOG SCALE

(1) Deposits minus Investments outside New York City. 1890–1914. These are actual call date figures for all national banks outside New York City. The deposits are "net" deposits, *i.e.*, individual deposits (see Chart VI (1)) minus clearinghouse exchanges, plus amounts due to minus amounts due from other banks. The "due to" (or from) includes amounts due to reserve agents, other national banks, state banks, trust companies, and savings banks. These are *not* the "net" deposits of the Comptroller which are computed for purposes of obtaining reserve ratios. The figures are from A. A. Young, *op. cit.*, pp. 8-13 [Chart VI (1)]. The investments exclude United States securities held to cover circulation and United States securities and other bonds held to cover United States deposits. They are also actual call date figures for all national banks outside New York City and have been taken from the same source.

(2) Clearings outside New York City. 1890–1913. These are annual averages taken by permission from E. Frickey, Bank Clearings outside New York City, 1875–1914, *Review of Economic Statistics*, vol. VII, 1925, p. 260. They are for seven selected cities. See Professor Frickey's article for further description of the series.

(3) Output of Manufacturing and Mining Multiplied by Prices. The index of manufacturing and mining is described in Chart VI (3). For the wholesale price index see the *Bureau of Labor Statistics Bulletin* 284, p. 131—all-commodity index, 1913 = 100.

(4) Pay Rolls. This curve is based on figures taken by permission from Real Wages in the United States, 1890–1926, by Paul Douglas, published by Houghton Mifflin Company, Boston, 1930, pp. 440 and 463. The series is the product of (*a*) estimated total numbers of persons employed in manufacturing and transportation and (*b*) average annual money earnings of persons employed in manufacturing and transportation. For a description of the series the reader is referred to Professor Douglas's book. Since both constituents are composed of unavoidably rough estimates, the product of the two is clearly a very questionable indicator of the general course of events, even apart from the fact that it would in any case not be strictly comparable with the other series used on the chart.

(5) Series (2) Divided by Series (4). Keeping in mind what has been said about Series (4), this curve is at best a highly conjectural approximation to the measure we should like to have.

CHART XXIV. PHILADELPHIA CLEARINGS

This chart presents the results of Dr. Georgescu's method applied to Philadelphia Bank Clearings, 1878–1914. See Chap. V, p. 215.

CHART XXV. UNITED STATES. ANNUAL. LOG SCALE

(1) Deposits outside New York City. The figures are annual averages of the call date figures of "individual" deposits described above, Chart VI (1).

(2) Clearings outside New York City. See Chart XXIII (2).

(3) Pig iron Consumption. See Chart XII (2).

(4) Equipment Production Index. See Chart XVII (1).

(5) Loans and Discounts outside New York City. These are annual averages of the loans and discounts of all national banks outside New York City reported for dates of call from A. A. Young, *op. cit.*, pp. 8–13, see Chart VI (1). Overdrafts are included in loans and discounts prior to 1898, but not later.

CHART XXVI. UNITED STATES. ANNUAL. LOG SCALE

(1) Expenditure on Producers' Goods. Series (1), Chart XVII multiplied by Series (5), Chart XI.

(2) Expenditure on Consumers' Goods. Series (4), Chart XVII multiplied by Series (1), Chart XI.

(3) Outside Clearings. See Chart XXIII (2).

(4) Expenditure on Producers' Goods Divided by Outside Clearings. Series (1) divided by Series (3).

(5) Expenditure on Consumers' Goods Divided by Outside Clearings. Series (2) divided by Series (3).

CHART XXVII. UNITED KINGDOM. LOG SCALE

(1) Production. See Chart V (2).

(2) Aggregate Money Wage Bill. Annual. From 1860 to 1901 the series is taken from A. L. Bowley, Tests of National Progress, *Economic Journal*, vol. XIV, September 1904, by permission of the author and Messrs. Macmillan & Company, Ltd., London. Professor

Bowley has since published a revised set of figures; see his recent book on Wages and Income in the United Kingdom since 1860 (Cambridge University Press, 1937). From 1901 to 1913 the series was taken by permission from A. C. Pigou, Industrial Fluctuations, 2d ed.; Macmillan & Company, Ltd., London, 1929, pp. 383–384. These figures are based on Bowley's rates of wages and estimates of variations in the number of the wage earning population.

(3) Provincial Clearings. 1887–1913. Quarterly averages of monthly data for Manchester and Birmingham taken by permission from D. S. Thomas, An Index of British Business Cycles, *Journal of the American Statistical Association*, vol. XXI, March 1926, p. 61. The source quoted is the *Bankers' Magazine*, London.

(4) Production Multiplied by Prices. Series (1) above multiplied by Series (3), Chart V.

(5) Total Taxable Income, adjusted for changes in the method of assessment. 1842–1913. Annual. The smoothing effect of taxable income from profits being defined as an average of actual profits [see below, Chart XXVIII (3)] should be borne in mind. The items of the series become strictly comparable from 1894 on (160 pounds exemption limit and repairs allowance). The series was taken by permission from J. Stamp, British Incomes and Property, pp. 318–319, published by P. S. King & Son, Ltd., London, 1916.

CHART XXVIII. UNITED KINGDOM. ANNUAL. LOG SCALE

(1) Wage Rates. The series from 1850 to 1903 has been taken by permission from G. H. Wood, Real Wages and the Standard of Comfort since 1850, *Journal of the Royal Statistical Society*, vol. LXXII, March 1909, pp. 99–103. Mr. Wood's index of money wages is partly based on Professor Bowley's work and partly on additional material. The index is a weighted average allowing for changes in the numbers employed in the various industries (agriculture, building, printing, shipbuilding, engineering, coal, puddling, cotton, wool and worsted, gas, and furniture). The series has been continued, by means of the figures of the Board of Trade, by W. T. Layton and G. Crowther, An Introduction to the Study of Prices, published by Macmillan & Company, Ltd., London, 1936, from which the relevant items have been taken by permission.

(2) Wages Bill. See Chart XXVII (2).

(3) Profits. Gross Schedule *D* assessments (Business Profits). In 1908–1909 roughly three-quarters of the assessments were based on the average of the three preceding years. As a rough approximation, therefore, the series (except in the cases of canals, railroads, ironworks, and gasworks, all of which were assessed for profits of the preceding year, and of mines, which were assessed for the average of the five preceding years, but for which detailed annual figures are given by Stamp so that individual adjustments were possible) was lagged by two years and items were plotted for midyear instead of for April. All figures were taken by permission from J. C. Stamp, *op. cit* [see above, Chart XXVII (5)].

(4) Unemployment. See Chart XX (4).

(5) Wage Bill Divided by Wholesale Prices. For wage bill see Chart XXVII (2). The figures for wholesale prices were taken by permission from G. F. Warren and F. A. Pearson, Prices, published by John Wiley & Sons, Inc., New York. Their index joins the Sauerbeck and Statist indices referred to in Chart IV (3).

(6) Real Wages. Same sources as above, series (1). In estimating real wages Mr. Wood assumed that four-fifths of total wages were in 1850 spent on commodities other than housing and that the latter item thence increased steadily (one-half of the increase in rent being attributed to improving quality of housing and one-half to other causes). For the rest Mr. Wood took the unweighted average of prices of all commodities of ordinary consumption for which series were then obtainable. The index has been continued on Board of Trade figures.

(7) Real Wages Allowing for Unemployment. Series (6) was corrected by Mr. Wood (*op. cit.*, Series (1)) by using the trade-union unemployment percentage (Series (4)). From 1896 on this series does not agree with Pigou's [see Chart XX (4)] or that given by the Abstract of Labour Statistics, which has been used instead.

CHART XXIX. UNITED STATES. LOG SCALE

(1) Wage Rate. 1840–1913. Annual. Index of rate per hour, excluding agriculture, 1910–1914 = 100, during the Civil War on currency basis. It is said to be based on "all available material." No allowance has been made for the reduction in hours worked per week. The source is the *Monthly Labor Review*, vol. XXXII, No. 2, February 1931, p. 143.

(2) Railroad Earnings. 1866–1913. Monthly figures corrected for seasonal. Gross earnings of 14 systems as they existed in 1914, made as homogeneous as possible by tracing back figures for roads later leased or absorbed by these systems. For a further description see A Monthly Index of Railroad Earnings, 1866–1914 by Arthur H. Cole, *Review of Economic Statistics*, vol. XVIII, February 1936. Professor Cole was kind enough to supply the figures from his files.

(3) Dividends. 1902–1913. Monthly. Payments by industrial corporations, from the *Review of Economic Statistics*, Preliminary vol. I, 1919, p. 164. *The New York Journal of Commerce and Commercial Bulletin* is the original source.

(4) Wage Bill. See Chart XXIII (4).

(5) Employment in Massachusetts Factories. 1889–1913. The index, 1914 = 100, was taken by permission from Ralph G. Hurlin, Three Decades of Employment Fluctuations, the *Annalist*, vol. XVIII (Oct. 21, 1921), pp. 387–388. Obviously, Massachusetts figures cannot be relied on to depict national employment faithfully.

(6) Commercial Failures. 1857–1913. Aggregate liabilities. From the *Statistical Abstract of the United States* for 1914, p. 681.

(7) Wholesale Prices. See Chart IV (1).

CHART XXX. GERMANY. LOG SCALE

(1) Wage Rates. 1850–1913. Pfennigs per man-hour paid to miners in the Ruhr Valley, Dortmund Mining District, taken by permission from Ernst Wagemann, Economic Rhythm, translated from the German by D. H. Blelloch and published by the McGraw-Hill Book Company, Inc., New York, p. 265.

(2) Wages Bill. Saxony. The figures were taken by permission from the *Vierteljahrshefte zur Konjunkturforschung, Erganzungsheft* vol. II No. 3, 1927, p. 33, edited by Professor Wagemann. Conditions in the Saxon Kingdom were considered as sufficiently typical of German conditions in general.

(3) Wholesale Prices. 1850–1913. The figures were taken from *Wirtschaft und Statistik*, vol. V *Sonderheft* 1, 1925, p. 19, and the *Statistisches Jahrbuch*, vol. XLVII, 1926, p. 263. Until 1878, the source is Adolf Soetbeer, Materialien zur Erläuterung und Beurteilung der Wirtschaftlichen Edelmetallverhältnisse und der Wahrungsfrage, Berlin, 1886.

(4) Profits in Saxony. From the article quoted in Series (2).

(5) Unemployment. 1906–1914. End of month figures of industrial unemployment taken by permission from Ernst Wagemann, Konjunkturlehre, published by R. Hobbing, Berlin, 1928, p. 195.

(6) Series (1) Divided by Series (3).

CHART XXXI. UNITED KINGDOM. ARITHMETIC SCALE

(1) Real Wages, Allowing for Unemployment. See Chart XXVIII (7).

(2) Nine-year Moving Average of (1).

(3) Deviations from nine-year moving average.

CHART XXXII. GERMANY. ANNUAL. LOG SCALE

(1) Loans and Discounts. Nine Berlin Grossbanken. End of year figures.

(2) Total Deposits (in the English sense of the term). Nine Berlin Grossbanken. End of year figures.

(3) Note Circulation of all German Note-issuing Banks.

All three series are based on the official figures. For a full presentation and discussion of these and related data see L. A. Hahn, Zur Frage des volkswirtschaftlichen Erkenntnisgehalts der Bankbilanzziffern, *Vierteljahrshefte zur Konjunkturforschung*, vol. I, 1926, *Ergänzungsheft* 4.

CHART XXXIII. UNITED STATES. LOG SCALE

(1) Individual Deposits plus Circulation outside New York City. See Chart VI (1).

(2) Loans and Discounts outside New York City. See Chart XXV (5).

(3) Individual Deposits plus Circulation minus Investments outside New York City. Series (1) minus the investment series described in Chart XXIII (1).

Actual call date figures have been used in all three cases.

CHART XXXIV. UNITED STATES. LOG SCALE

(1) Production of Industrial Equipment. See Chart XVII (1).

(2) Building Permits. See Chart XIV (5).

(3) Investments. National Banks outside New York City—a somewhat biased sample. See Chart XXIII (1). A five-item moving total was plotted.

(4) New Security Listings. Stocks and bonds listed on the New York Stock Exchange minus old issues and issues replacing existing securities. The series was taken from the *Commercial and Financial Chronicle*, by permission of the William B. Dana Company, New York, and from the *Financial Review*.

(5) Loans and Discounts. National Banks outside New York City. See Chart XXV (5). A five-item moving total was plotted.

CHART XXXV. BANK OF ENGLAND FIGURES, ETC. 1844–1914. LOG SCALE

All series except (2) and (3) are annual averages taken by permission from R. H. I. Palgrave, Bank Rate and the Money Market, published by John Murray, London, pp. 12–13, for the years up to 1900, and from the *Bankers' Almanac and Yearbook*, 1935–1936, for the years 1900–1914.

(1) Private Deposits at the Bank of England. There is a break in 1873, owing to the fact that since then Chancery Balances have been put under the head of government deposits. The average amount of these balances was 1 million pounds.

(2) London Total Clearings Divided by Total English Deposits. The clearings are monthly average clearings per working day during June or December multiplied by 306, taken by permission of the University of Chicago Press, Chicago, from The Velocity of Bank Deposits in England, by Lionel D. Edie and Donald Weaver, *Journal of Political Economy*, vol. XXXVIII, No. 4, August 1930, p. 397. The deposits are monthly average total deposits in the joint stock and private banks of England and Wales (except the Bank of England) on June 30 or Dec. 31, taken by Edie and Weaver from the *Economist*.

(3) London Total Clearings See Series (2).

(4) Proportion of Reserve (Banking Department) to Deposits plus Bank Post Bills.

(5) Proportion of London (Clearing) Bankers' Balances to the Reserve of the Banking Department of the Bank of England.

(6) London Bankers' Balances at the Bank of England.
(7) "Other Securities" in the banking department.
(8) Notes Held by the Public.

CHART XXXVI. UNITED STATES. LOG SCALE

(1) Bank Clearings, New York City. 1866–1914. From 1866 to 1902 the series was taken from Ada Matthews, New York Bank Clearings and Stock Prices, 1866–1914, *Review of Economic Statistics*, vol. VIII, 1926, p. 188. The data were used by permission of the *Commercial and Financial Chronicle*, which is the source quoted by Miss Matthews. From 1903 to 1914 the data were taken from the *Wall Street Journal* by permission of Dow, Jones & Co., Inc., New York. Four-quarter moving totals of quarterly totals centered on the third item have been plotted.

(2) Value of Transactions, New York Stock Exchange. 1875–1914. Annual. Number of shares traded multiplied by average price. The figures for 1875 to 1909 were taken from the United States National Monetary Commission, Statistics for the United States, 1867–1909, p. 9, where the *Commercial and Financial Chronicle* is given as the source, while the figures for 1909 to 1914 came directly from the *Commercial and Financial Chronicle*.

(3) Call Loan Rate, New York Stock Exchange. 1866–1914. Moving 12-month totals (centered on the seventh month) of monthly averages of daily renewal rates. The series was taken by permission from the Standard Trade and Securities Service, *Standard Statistical Bulletin*, Base Book, January 1932, p. 42, and April 1934, p. 6. The sources quoted there are Ogle, Dunn & Company, whose permission to use their material is herewith acknowledged, the *Review of Economic Statistics*, and the *Financial Review*.

(4) Loans and Discounts. New York City. 1870–1914. See Chart XXV (5). Five-item moving totals of call date figures have been plotted.

(5) Deposits. New York City. 1870–1914. "Net" deposits of national banks. For definition of "net" deposits and also for the source see Chart XXIII (1). Five-item moving totals of call date figures have been plotted.

(6) Railroad Stock Prices. Monthly. From 1854 to 1882 the series was taken by permission from the *Annalist*, vol. XL, Oct. 28, 1932), p. 580. It is the Clement Burgess index of stock prices, average of high and low figures, adjusted for stock dividends. From 1883 to 1935 the index of 20 railroads—weighted by the number of shares of stock outstanding—of the Standard Trade and Securities Service, *Standard Statistical Bulletin*, April 1934, p. 30, has been used by permission. The two series were spliced together.

(7) Industrial Stock Prices. Monthly. From 1883 to 1900 the Axe-Houghton weighted average of 10 industrial stocks has been used by permission of the *Annalist*, vol. XXXVII, Jan. 16, 1931, p. 177. From 1900 to 1913 the index used was taken by permission from the Standard Trade and Securities Service, *Standard Statistical Bulletin*, April 1934, p. 30. It is composed of the prices of 50 industrial stocks weighted by value of shares outstanding, corrected for rights, stock dividends, changes in par value, and consolidations. Both indices are averages of high and low. They were spliced together.

CHART XXXVII. GREAT BRITAIN. LOG SCALE

(1) British Stock Prices. 1867–1914. End of month data; 1890 = 100; unweighted arithmetic average. The index was taken by permission from the London and Cambridge Economic Service, *Special Memo.* 37, An Index Number of Securities, 1867–1914, by K. C. Smith and F. C. Horne. The stocks included divide up into the following divisions: (1) coal, iron, etc; (2) electrical goods; (3) textiles; (4) food; (5) drink; (6) building materials; (7) lighting; (8) chemicals; (9) stores; (10) miscellaneous; (11) transport and communication.

(2) London Call Rate. 1888–1914. Annual average rate on money at call or short notice taken until 1906 from the United States National Monetary Commission's Statistics for Great Britain, Germany, and France, 1867–1909, p. 143. From 1907 to 1914 the figures are annual averages of rates on floating money as published by the *Economist*.

(3) London Clearings. 1870–1914. Total amounts cleared from 1870 to 1902; after that, "town clearings." Both series are from the *Statistical Abstract for the United Kingdom* and were spliced together.

CHART XXXVIII. GERMANY. LOG SCALE

(1) Stock Prices. 1870–1913. Monthly. This series was taken, by permission, from Otto Donner, Die Kursbildung am Aktienmarkt, *Vierteljahrshefte zur Konjunkturforschung, Sonderheft* 36, 1934, p. 98. It is composed of quotations for an increasing number of companies, 70 of which were available as far back as 1890, and includes banks, shipping companies, railways, mines, electric companies, manufacturing, and building.

(2) Industrial Bond Issues. 1883–1913. Annual. Domestic issues (market value) from H. Kleiner, Die Emissions-Statistik in Deutschland, *Münchner Volkswirtschaftliche Studien* 131, 1914, Table I, pp. 119–124. The main source of the material embodied in that table was *Der Deutsche Ökonomist*. The data compiled by this periodical refer to listings at the stock exchanges rather than to issues and are not quite complete, especially as regards the listings at the smaller stock exchanges. In these and other respects other compilations, such as those of the *Frankfurter Zeitung*, the Imperial Statistical office (since 1897), or the statistical department of the Reichsbank may be preferable. But the material of the *Deutsche Ökonomist* yields the longest homogeneous series, and on the whole it seemed best to use it.

(3) Industrial Stock Issues. From the same source as (2).

(4) Foundations. 1871–1913. Annual. "Nominal" capital of newly founded joint stock companies, from *Der Deutsche Ökonomist*, vol. XXVI, 1908, p. 28, and vol. XXXII, 1914, p. 412.

(5) Dividends, Per Cent of "Nominal" Capital. 1870–1913. Annual. This series has been taken, by permission, from the study by Otto Donner, see above, Series (1). Data are for the industrial companies included in the stock price index of the Statistisches Reichsamt. From 1890 on, the percentages are weighted according to the share capital of the various companies.

CHART XXXIX. UNITED STATES POSTWAR PULSE. LOG SCALE

(1) Deposits plus Circulation. The deposits are net demand deposits of weekly reporting member banks in 100 leading cities outside New York. The monthly average figures used (as revised in 1929) were supplied to the author from the files of the Harvard Economic Society (now Committee on Research in the Trade Cycle) This series, subsequently reported through Aug. 23, 1935, was at the time of writing available only through February 1933. Therefore, it was spliced to a series which covered 89 cities from January 1932, and 90 cities from January 1934. Since the Banking Act of 1935 changed the definition of net demand deposits, it should be observed that that term is being used in its old sense here: it includes all demand deposits minus United States government deposits, but balances due from banks and trust companies subject to immediate withdrawal and cash items in process of collection were (for each bank separately) deducted from balances due to other banks and subject to immediate withdrawal, so that it may still be said that, very roughly, these figures *indicate* the variations in the demand deposits held by the "public."

The series of money in circulation was taken, by permission, from J. W. Angell, The Behavior of Money, pp. 178–179, published by the McGraw-Hill Book Company, Inc., New York, 1936. It represents a monthly estimate of currency issued and not yet redeemed

minus currency held in the Treasury (as asset), in federal reserve banks or with federal reserve agents, and vault cash of all reporting banks (as reported to the comptroller of the currency). The figures for vault cash are available only for June 30 of each year, and had to be estimated from call date information for all member banks' vault cash. Monthly data exist, however, for the sum of currency in outside circulation plus vault cash of all banks. Since addition of those figures for deposits and circulation would have given much too great a weight to circulation, the proportion was calculated of net demand deposits of the above banks to total "circulating deposits" as estimated by Angell, *op. cit.* It turned out to be fairly steady, the average for the year 1926 being 37.6 per cent. On obviously very simplifying and bold assumptions, therefore, 38 per cent of that circulation was added to those net demand deposits of weekly reporting member banks. It is impossible to use Angell's "circulating deposits," since they include New York City and also United States deposits.

(2) Interest Rate. Monthly. From 1919 to 1931, New York prime commercial paper rate, taken by permission from the Standard Trade and Securities Service, *Standard Statistical Bulletin*, Base Book, January 1932. From 1932 to 1934, the rate on four to six months' paper has been taken from the *Survey of Current Business*.

(3) Production Index. Monthly. This is the Federal Reserve Board's seasonally adjusted index of manufacturing and mining, taken from the *Federal Reserve Bulletin*, vol. XIX, September 1933, p. 584, and vol. XXI, May 1935, p. 282. It is a weighted average per working day. The 1923–1925 average value was used for weighting in the case of mining, and the 1923 value added by manufacture in the case of manufacturing. For a further description of the index, see the *Federal Reserve Bulletins*, vol. XIII, No. 2, February 1927; vol. XIII, No. 3, March 1927; and vol. XVIII, No. 3, March 1932.

(4) Wholesale Prices. Monthly. This is the Bureau of Labor Statistics index on the base 1910–1914 = 100. The new index has been used for the years 1932–1934 by shifting its base (1926) to the base 1910–1914.

CHART XL. GERMAN POSTWAR PULSE. LOG SCALE

(1) Wholesale Prices. 1919–1934. Monthly averages. This is the index of the Statistisches Reichsamt, taken from *Wirtschaft und Statistik* (1913 = 100). From 1919 to 1924 this is an arithmetic average of prices of less than 50 commodities, essentially raw materials and semi-manufactured goods, weighted according to prewar consumption. From 1924 to 1934 it is an arithmetic average of about 400 commodities (including finished products) on the basis of quotations increasing from 800 to 1,000, weighted by an average of prewar and postwar consumption (where postwar consumption approaches prewar consumption) or on 1925 consumption figures. Groups are weighted as follows: agricultural commodities 35 per cent, imported groceries 3 per cent, industrial raw materials and semi-manufactured products 38 per cent, manufactured goods 24 per cent. The two indices were spliced together. For more detailed information see *Wirtschaft und Statistik*, vol. VI, 1926, p. 875, and *Vierteljahrshefte zur Statistik des Deutschen Reiches*, vol. XXXVI, 1927, p. 37, and vol. XLI, 1932, p. 139.

(2) Interest Rate. Rate on bank acceptances, monthly average. Taken by permission from the Institut für Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936, p. 113.

(3) Production. Quarterly index of industrial production per working day (1928 = 100), taken by permission from the Institut für Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936, p. 52. Seasonal variations are eliminated. The Saar is included from March 1935, so that the series is not strictly homogeneous. The index was first calculated in 1927, and revised in 1929, 1931, 1933, and 1935. It is an arithmetic average. Series are weighted within each group by value added, number employed, and horse-power

installed. Groups are separately weighted by value added. The index now represents 66 per cent of industrial net production. For further discussion, see *Vierteljahrshefte zur Konjunkturforschung*, vol. IV, No. 4A, 1930; vol. VI, No. 1A, 1931; vol. VII, No. 1A, 1933; and the *Wochenbericht* of the Institut für Konjunkturforschung, vol. VIII, No. 24, for June 19, 1935.

(4) Deposits and Circulation. The deposits (*Glaubiger*, mostly what in this country would be called business deposits) are those of five big banks (evidently taken as a sample, but an unsatisfactory one, of total deposits), end of month figures from the Institut für Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936, p. 136. The five banks are: Deutsche Bank und Disconto-Gesellschaft, Berlin; Dresdner Bank, Berlin; Commerz- und Privat Bank, Berlin; Bayerische Hypotheken-und Wechsel-Bank, München; Allgemeine Deutsche Credit-Anstalt, Leipzig. Figures include the effects of amalgamations. No figures are available for January of each year, and from 1925 to 1927 figures are given only for February, April, June, August, October, and December. The circulation series is total money in circulation, end of month figures from the Institut fur Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936, p. 130. No allowance is made for money in banks.

CHART XLI. BRITISH POSTWAR PULSE. LOG SCALE

(1) Wholesale Prices. 1919 1934. Monthly. The index, 1913 = 100, was taken from the *Board of Trade Journal*. For a description see A. W. Flux, The Measurement of Price Changes, *Journal of the Royal Statistical Society*, vol. LXXXIV, Part 2, March 1921. It is the geometric average of the wholesale prices of 150 commodities divided into eight groups of approximately equal total values of output or, in the case of imported consumers' goods, of imports in 1907. The basis of valuation is the census of production of 1907. Within the eight groups, classes of commodities are represented by a number of price series varying according to the same criterion. The newly revised index covering 200 commodities and weighting according to the values of the 1930 census of production presents almost exactly the same picture from 1930 to 1934. Therefore, it was not thought necessary to redraw the curve when the new index became available.

(2) Interest Rate. Monthly. Average rate on three months' commercial paper for week ending the fifteenth of the month. Data were taken by permission from the monthly bulletins of the London and Cambridge Economic Service.

(3) Deposits plus Circulation. The deposits are current accounts of the 10 London Clearing Banks, average for the month, taken from the Report of the Committee on Finance and Industry, 1931, Cmd. 3897, pp. 284–289, and for later years from the Bank of England Statistical Summary. In the case of the National Bank, Ltd., only figures relating to offices in England are included. Some items in the earlier years are estimates. The circulation series represents Bank of England and currency notes in circulation from the eleventh to the seventeenth of each month, taken, by permission, from the monthly bulletins of the London and Cambridge Economic Service.

(4) Production Index. Quarterly index of production taken, by permission, from the London and Cambridge Economic Service, *Monthly Bulletin*, vol. VIII, No. 4 (*Special Quarterly Issue*, Apr. 23, 1929) and later *Special Quarterly Issues*. This is an arithmetic average, 1924 = 100, of individual output series, weighted according to *net* output as given by the 1924 census of production. For further discussion see the *Special Memorandum* 8 of the London and Cambridge Economic Service, The Physical Volume of Production, by J. W. F. Rowe. The subindexes are (1) coal mining; (2) pig iron, steel, shipbuilding, railroad vehicles; (3) copper, lead, tin, zinc; (4) cotton, silk; (5) wheat, flour, cocoa, tobacco; (6) oil seed crushings, heavy chemicals; (7) paper.

CHART XLII. INDUSTRIAL PRODUCTION. ANNUAL. LOG SCALE

(1) United States. Index taken, by permission, from the Standard Trade and Securities Service, *Standard Statistical Bulletin*, December 1935, p. 39. A weighted composite of 64 series. Corrected for seasonal. Revised in 1933. For series and weights see the Standard Trade and Securities Service, *Basic Statistics*, vol. LXXX, No. 29, June 5, 1936, p. D-36.

(2) Germany. See Chart VII (2).

(3) Great Britain. Hoffmann Index. See Chart V (2).

(4) Great Britain. London and Cambridge Economic Service Index. See Chart XLI (4).

CHART XLIII. UNITED STATES PRODUCTION SERIES. 1919–1934. MONTHLY. LOG SCALE

All the series taken by permission from Y. S. Leong, Indexes of the Physical Volume of Production of Producers' Goods, Consumers' Goods, Durable Goods, and Transient Goods, *Journal of the American Statistical Association*, vol. XXX, No. 189, June 1935. All series are on a daily average output basis and adjusted for seasonal variation. The 1923-1925 average = 100. The aggregative method was used to combine the individual series (groupwise) into composite index numbers. Weighting is by value added by manufacture. The average value added of the census years 1923, 1925, and 1927 has been used for producers' goods, all durable goods, and total manufacturing output from 1922, and for consumers' goods excluding motorcars, and for transient goods from 1923 on. Those weights seemed, however, inappropriate for the preceding years. Accordingly, Mr. Leong computed another set of index numbers, using the value added figures of 1919, and combined it with the first set. The resulting index is, for 1919 to 1922, a simple geometric average of the two in the case of consumers' goods excluding motorcars, and of transient goods, and for 1919 to 1921 a geometric average with variable weights in the case of producers' goods, all durable goods, and total manufacturing output. This procedure, though not easy to defend on general principles, probably represents in this case a fair approximation to the theory outlined in Chap. IX.

(1) Producers' Goods. Unfinished goods or goods used to produce other goods. Certain textiles, forest products, paper and printing, chemicals, leather, stone and clay, iron and steel, nonferrous metals and their products, transportation equipment.

(2) Consumers' Goods. Series representing fabricated goods for immediate or nearly immediate consumption. Food and kindred products, certain kinds of textiles and printing, gasoline and kerosene, rubber products, shoes, gloves, radiators, sanitary ware, automobiles, tobacco manufactures.

(3) Consumers' Goods Excluding Automobiles. Same as Series (2), except for automobiles.

(4) Durable Goods. Goods with an average useful life of more than two years. Forest products, coke, stone, clay, glass, iron, steel, nonferrous metals and their products, and transportation equipment.

(5) Transient Goods. Products with an average useful life not exceeding two years. Food and kindred products, textiles and their products, paper and printing, chemical, rubber, and leather products.

(6) Manufactures. All the series used in the above indices: 15 food and kindred products; 4 textiles and textile products; 2 forest products; 10 paper and printing; 7 chemical and allied products; 2 rubber products; 5 leather and leather products; 2 stone, clay, and glass products; 4 iron and steel products; 4 nonferrous metals and their products; 5 transportation equipment; 3 tobacco manufactures. These items represent directly about

50 per cent of the value added by manufacture in all manufacturing industries in the census years 1923, 1925, and 1927.

CHART XLIV. UNITED STATES CUSTOMERS' LOAN RATES. ANNUAL. ARITHMETIC SCALE

All three series are yearly averages of monthly averages as reported by banks to the Federal Reserve Board. The monthly averages are based on rates reported for three types of customers' loans, commercial loans, and time and demand loans on securities. The averages are weighted according to the relative importance of each of these three types of loans, the relative importance of each reporting bank, and the relative importance of each city in each group.

CHART XLV. UNITED STATES PROFIT RATIOS. ANNUAL. ARITHMETIC SCALE

All series were taken, by permission, from W. L. Crum, Corporate Earning Power in the Current Depression, *Business Research Studies* 10, Harvard University Graduate School of Business Administration. The profit ratio is statutory net income (minus federal taxes), divided by gross income. The data are from federal income tax reports. For further explanation, see the article mentioned.

CHART XLVI. UNITED STATES. 1919–1934. MONTHLY. LOG SCALE

(1) Outside Debits. Bank debits to individual deposit accounts in 140 cities outside New York City as published by the Federal Reserve Board. For the most part, these debits arise from checks against depositors' accounts and represent payments. *All* debits to deposit accounts of individuals, firms, corporations, and U. S. government, county, and municipal accounts enter the total, however, including debits to war loan deposit accounts, savings accounts, payments from trust accounts, and certificates of deposit paid, except debits in settlement of clearinghouse balances, debits to accounts of other banks, payments of cashiers' checks, charges to expenses and miscellaneous accounts, corrections, and the like. See the *Twenty-Second Annual Report of the Federal Reserve Board*, 1935, p. 175.

(2) Outside Net Demand plus Time Deposits minus Outside Investments. See Chart L (4) and (7).

(3) Index of Pay Rolls in Manufacturing Industry. This is the revised index of the Bureau of Labor Statistics, see the Bureau's *Bulletin* 610, p. 22. It represents average weekly factory pay rolls (1923–1925 = 100). In 1925 54 industries were covered, employing 83 per cent of the workers in all manufacturing industries. The establishments surveyed employed about 50 per cent of the 83 per cent. Since 1931 coverage extends to 90 industries. Weighting is according to pay rolls in 1923–1925. The index is not corrected for seasonal variations. Another correction has, however, been made which should be mentioned. Since the index revealed a downward bias when compared with the trend shown by the figures of the biennial census, it was adjusted so as to conform to that trend. The operation consisted essentially in straight-line adjustments to the averages of pay rolls for pairs of census years: an appropriate cumulative unit was applied to the 24-month interval, in order to bring up the average for each year to the amount indicated by the census figure. For example, the original data for the years 1919 to 1921 were thus adjusted to the annual census averages for those two years. Then, before going on to the adjustment to the census figures from 1921 to 1923, preliminary adjustment for 1921 to 1923 became necessary in order to reestablish the comparability destroyed by the previous adjustment.

(4) Outside Net Demand Deposits. See Chart XXXIX (1), first component.

(5) Annual Aggregate Realized Income. Morris A. Copeland, in How Large is Our National Income?, *Journal of Political Economy*, vol. XL, December 1932, p. 773, presents

a series labeled "realized income revised," which is a revision of Wilford King's series. It excludes both undistributed profits and capital gains. W. L. Crum, in turn, revised Professor Copeland's series, see The National Income and its Distribution, *Journal of the American Statistical Association*, vol. XXXI, March 1935, p. 36, deducting "imputed income yielded by individually owned urban homes and other durable consumers' goods" by means of the figures given in America's Capacity to Consume, by Maurice Leven, H. G. Moulton, and Clark Warburton, Brookings Institution, 1934, p. 153.

For the chart Professor Crum's revised series, taken by permission from the *Journal of the American Statistical Association*, was spliced on to the series prepared by the Department of Commerce as published in the *Survey of Current Business*, July, 1936, by Robert R. Nathan, Chief, Income Section, Division of Economic Research. This is a continuation of the work presented in National Income 1929–1932, *Senate Document* 124, Seventy-third Congress, Second Session. The figures used are those of "national income paid out." They represent payments to, or receipts by, individuals, such as wages, salaries, interest, dividends, entrepreneurial withdrawals, net rents, and royalties, and differ from "income produced" by positive or negative business savings.

(6) Outside Debits Divided by Outside Net Demand plus Time Deposits. See Series (1) and Chart L (4).

(7) Hourly Earnings in Manufacturing. This series is labeled wage rates on the chart but, of course, may vary in responses to changes in the amount of overtime and in the composition of the working force. The figures are quarterly for 24 industries, from 1920 to 1926, and monthly for 25 industries, from 1927 on. Data through 1926 were taken by permission from the National Industrial Conference Board, Wages in the United States, 1914–1930, p. 44, and from 1927 to date from the *Survey of Current Business*, vol. XII, No. 12, December 1932, p. 18, and later numbers. At the end of 1931 over 1,400 plants were covered. The weekly earnings from which the hourly rates are derived are computed by weighting the average weekly earnings in each industry by the relative importance of the industry as revealed by the Census of Manufactures of 1923. Moreover, the weights are made to reflect the relative importance of each labor group in each industry as ascertained by the Conference Board's investigations during 1927–1929. Data on hours of work are from the same number of plants and workers as the weekly earnings. The base is 1923 = 100.

This chart was made up before the National Industrial Conference Board's volume on Wages, Hours, and Employment in the United States, 1914–1936, became available. That volume carries the series back all the way on a monthly basis and, while the general method is the same, certain revisions in the details of procedure have been made. Results differ, however, so insignificantly from the series above described that it was not thought necessary to redraw the chart and to recalculate the series into which these figures enter [Chart XLVII (6) and (7)].

CHART XLVII. UNITED STATES. LOG SCALE

(1) Hourly Wage Rates. See Chart XLVI (7).

(2) Pay Rolls. See Chart XLVI (3).

(3) Employment. Manufacturing Industries. For source and description of the material used see Chart XLVI (3) [Pay rolls]. In this index the weights are based on the annual average number of wage earners employed in the industry or group from 1923 to 1925.

(4) Cost of Living. This index has been constructed by the National Industrial Conference Board, and is here used by permission. It aims specifically at the prices relevant to the American wage earner's budget (1923 = 100). The five major groups (postwar budget weights) are food (33 per cent), housing (20 per cent), clothing (12 per cent), fuel

and lighting (5 per cent), and sundries (30 per cent). The food index used is the Bureau of Labor Statistics retail food price index for the fifteenth of each month. From 1920 to 1925 the figures are based on three comprehensive surveys for each March, July, and November, and less comprehensive information for the other months. Since 1925, monthly calculations have been made on a comprehensive basis. The figures were taken from the Standard Trade and Securities Service, *Standard Statistical Bulletins*, and the U. S. Department of Commerce, *Survey of Current Business*, vol. XVI, No. 1, January 1936, p. 19. An improved index, which differs from the one used sometimes by as much as 2 per cent, has been published since in the National Industrial Conference Board's volume on Cost of Living in the United States, 1914–1936. It gives somewhat lower figures for the earlier and somewhat higher figures for the later years.

(5) Wholesale Prices. See Chart XXXIX (4).

(6) Series (1) Divided by Series (5).

(7) Series (1) Divided by Series (4).

(8) Series (2) Divided by Series (4).

(9) Series (2) Divided by Series (5).

CHART XLVIII. GERMANY. LOG SCALE

(1) Unemployment. The number of unemployed registered at the employment offices. End of month figures. Data taken from the Institut für Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936. From March 1935 the Saar country is included.

(2) Wage Rates. Average standard hourly (or piece) rates of workers of the highest standard age group. First of the month figures, taken from the Institut für Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936. The old index of the statistical office of the Reich from 1925 to 1927 was chained to the new index, which goes back to 1928. The old index included a smaller number of industrial groups and only male workers. The new index includes female workers and is weighted according to the average number employed in the years 1928 to 1930. For further information see the *Vierteljahrshefte zur Statistik des Deutschen Reichs*, vol. XL, 1931, *Heft* 2, pp. 94 *et seq.*

From 1932 to 1934 a third index has been used. It represents standard rates in the highest age group of unskilled male workers, and was taken from the *Statistisches Jahrbuch des Deutschen Reichs*, vol. LV, 1934, p. 279. It was spliced on to the other index.

Of course, standard wage rates cannot be trusted to represent the price of labor accurately.

(3) Wage Bill. Income from wages and salaries according to the estimate of the Institut für Konjunkturforschung--excluding pensions and including the income from all emergency and relief employment. The items for the second and third quarter of 1935 do *not* include the Saar. The figures were taken from the Institut für Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936.

(4) Dividends. The data of the Institut für Konjunkturforschung's *Konjunktur-Statistisches Handbuch*, 1936, are believed to give a rough picture of the course of total dividends. Two figures are presented for each quarter. One is comparable, as regards companies included, with the figure given for that quarter of the preceding year, and the other is comparable with the figure for the corresponding quarter of the following year. Link relatives could not be constructed between the different quarters in the same year. Therefore, the fourth quarter of 1926 was used as the basis of link relatives of the items for the fourth quarter of each year, because more than half of all dividends are paid out in the fourth quarter. However, any significant change in the dates of dividend payments would destroy any value the above-described relatives may have as an index of total dividends paid out.

(5) Cost of Living. Both the old index of the Statistisches Reichsamt covering the years from 1925 to 1928 and the new index constructed from 1928 on were taken from the Institut für Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936. From 1925 to 1928 groups are weighted mostly on the basis of the budget inquiry of 1907, but some account was taken of the changes which occurred since the war. From 1928 on, the index is weighted according to the results of the budget inquiry of 1927–1928. The old and new indices were linked together by the chain method.

(6) Wholesale Prices. See Chart XL (1).

(7) Series (2) Divided by Series (5).

(8) Series (2) Divided by Series (6).

(9) Series (3) Divided by Series (6).

(10) Series (3) Divided by Series (5).

CHART XLIX. GREAT BRITAIN. LOG SCALE

(1) Profits. 1920–1934. Annual. General index of the returns to "industrial capital" as a whole. Base 1924 = 100. No allowance was made for the increase in capital invested since 1924. The "capital" includes debentures and other items, the returns on which vary slowly. The data for 1932, 1933, and 1934 are provisional. The figures were taken from Sir J. C. Stamp's letter to the *London Times*, Aug. 9, 1935, p. 6. Obviously this series indicates but very imperfectly the variations we would like to measure.

(2) Wage Rates. The figures were taken by permission from A. L. Bowley, A New Index Number of Wages, London and Cambridge Economic Service, *Special Memo* 28. From 1919 to 1925 it is an unweighted index of wage rates in 11 occupations (December 1924 = 100). This was spliced on to the new index of average weekly wages, which is available back to 1925. The new index covers 20 occupations and is weighted according to the wage bill of each group in the base period. Figures are for the fifteenth of the month. Professor Bowley has since revised his figures. For the new index, see again his recent book, Wages and Income in the United Kingdom since 1860.

(3) Employment. This index was taken from the supplements to the *Economist*, Oct. 21, 1933, p. 6, and later numbers. It is based on the number of insured workers in employment in Great Britain, as published in *The Ministry of Labour Gazette* for the third week of each month. Seasonal fluctuations were not eliminated (1924 = 100).

(4) Commercial Failures. The annual number of commercial failures in England and Wales, taken from the Statistical Abstracts for the United Kingdom.

(5) Wholesale Prices. See Chart XLI (1).

(6) Cost of Living. This index is an arithmetic average (July 1914 = 100). Retail price quotations (first of the month) are obtained from large and small towns, and for a number of articles in each of the five major groups. Each group is weighted according to its importance in the budget of a "typical" workingman's household as ascertained by the Board of Trade Study of 2,000 workingmens' families made in 1904. The index has been taken from the Abstract of Labour Statistics. See The Cost of Living Index Number, Method of Compilation, H.M.S.O.

(7) Series (2) Divided by Series (5).

(8) Series (2) Divided by Series (6).

CHART L. UNITED STATES. 1919–1934. MONTHLY. LOG SCALE

(1) Net Demand Deposits, New York City. Monthly averages of weekly data of weekly reporting member banks in New York City. Figures as revised in 1929. Federal Reserve Board data. See Series (2).

(2) Total Deposits—Time and Demand: New York and Outside Net Demand plus Time Deposits of Weekly Reporting Member Banks in Leading Cities. Monthly aver-

ages of weekly figures. Data as revised in 1929 (see *Federal Reserve Bulletin*, vol. XV, No. 1, January 1929). For further description of net demands deposits see Chart XXXIX (1), first component. Remarks on the changing number of cities and splicing operations also apply to Time Deposits.

(3) Bank Debits outside New York City. See Chart XLVI (3).

(4) Outside Time plus Net Demand Deposits. See Series (2) above.

(5) Loans and Discounts of Reporting Member Banks outside New York City. For changing number of cities and splicing see Chart XXXIX (1), first component. Monthly averages as revised 1929. For further description of the series, see the *Federal Reserve Bulletin*, vol. XV, No. 1, January 1929.

(6) Net Demand Deposits outside New York City. See Chart XXXIX (1).

(7) Outside Investments. Monthly averages of figures for weekly reporting banks outside New York City. Federal Reserve Board data as revised in 1929. For number of cities and splicing operations see Chart XXXIX (1), first component. For further description see the *Federal Reserve Bulletin*, vol. XV, No. 1, January 1929.

CHART LI. LONDON CLEARING BANKS. LOG SCALE

(1) Commercial Bills Discounted. Ten London Clearing Banks. For source see Chart XLI (3).

(2) Treasury Bills Discounted. See Series (1).

(3) Treasury plus Commercial Bills Discounted. 1930–1936. These are figures for nine London Clearing Banks (excluding the National Bank, Ltd.). Monthly averages, taken by permission from the monthly bulletins of the London and Cambridge Economic Service.

(4) Advances (Loans and Overdrafts). From January 1919 to March 1931, see Series (1). The figures for nine Clearing Banks (see Series (3)) were spliced on for 1931–1936.

(5) Investments. From 1919 to 1931 see Series (1). Monthly averages for the nine Clearing Banks, see Series (3), were spliced on from 1931 to 1936. Investments are exclusive of investments in affiliated banks.

(6) Deposit (Time) Accounts. From 1919 to 1931, see Series (1). From March 1931 on, the figures were taken from the Bank of England Statistical Summary. There were minor changes in 1931 in the allocation of certain deposits. The 1936 figures are for 11 banks.

(7) Current (Demand) Accounts. Same sources as Series (6).

(8) Country plus Provincial Clearings. These are country clearings at the London clearinghouse plus clearings at 11 provincial clearinghouses. From 1920 to 1928 these figures were taken by permission of the University of Chicago Press, Chicago, from L. D. Edie and D. Weaver, Velocity of Bank Deposits in England, *Journal of Political Economy*, vol. XXXVIII, No. 4, August 1930. For the rest of the period this series has been spliced on to the one published by the London and Cambridge Economic Service.

(9) Country plus Provincial Clearings Divided by Current Accounts of Ten London Clearing Banks. 1920–1928. The clearings are those described in Series (8) and the current accounts are as estimated by L. Edie and D. Weaver, *op. cit.*, p. 395. The reader is referred to that article for further discussion of the series and the method of computation.

CHART LII. UNITED STATES. LOG SCALE

(1) Call Loan Rate, New York Stock Exchange. Monthly averages of daily renewal rates. The series was taken, by permission, from the Standard Trade and Securities Service, *Standard Statistical Bulletin, Base Book*, January 1932 and later numbers. The sources quoted there are Messrs. Ogle, Dunn & Company, whose permission is herewith acknowledged, and the Federal Reserve Board. See Chart XXXVI (3).

(2) Brokers' Loans, New York City. From 1919 to 1926 the figures are for (call and time) street loans placed by New York City reporting banks on their own account, and for correspondents. For some banks these figures do not include loans to dealers in securities. From 1926 to 1935 the figures are monthly averages of the loans to brokers and dealers on security collateral, made by the weekly reporting member banks in New York City. They represent call and time loans for own account, for account of out-of-town banks, and for account of others, as compiled by the Federal Reserve Board. The two series, though very imperfectly comparable, were spliced together. A much better one is available since September 1935.

(3) Industrial Stock Prices. This index was taken, by permission, from the Standard Trade and Securities Service, *Standard Statistical Bulletins*. It is the monthly average of their weekly stock price index (351 industrials). Weighting is according to the number of shares outstanding. The average for 1926 = 100.

(4) Bond Yields. This index was taken by permission from the Standard Trade and Securities Service, *Standard Statistical Bulletins*. It is an arithmetic average of yields to maturity of 60 high-grade bonds, 15 industrials, 15 railroads, 15 public utilities, and 15 municipals. Monthly averages of Wednesday closing prices.

(5) Net Demand Deposits, New York City. See Chart L (1).

(6) Debits, New York City. See Chart L (3) [Outside Debits].

(7) Railroad Stock Prices. This index of 20 railroads, weighted by the number of shares of stock outstanding, was taken by permission from the Standard Trade and Securities Service, *Standard Statistical Bulletins* (*e.g.*, see April 1934, p. 30). 1926 = 100.

(8) Loans and Discounts, New York City. See Chart L (5) [Outside Loans and Discounts].

CHART LIII. ISSUES FOR "NEW CAPITAL," NEW YORK STOCK EXCHANGE. ANNUAL

Figures are for total corporate, domestic and foreign, security issues for "New Capital" by industrial groups, see Statistical Abstract of the United States, 1934, p. 278. Preferred stocks of no par value and all common stocks are taken at their offering price, other issues at par. See the *Commercial and Financial Chronicle*, Mar. 26, 1921, p. 1216, for a discussion of the figures, of which it is the original source.

CHART LIV. UNITED STATES. LOG SCALE

(1) Failures. Liabilities, Monthly. Figures taken by permission from the Standard Trade and Securities Service, *Standard Statistical Bulletins*, originally compiled by Messrs. Ogle, Dunn & Company and others.

(2) Production of Producers' Goods. See Chart XLIII (1).

(3) "Productive" Capital Flotations. This series was used with the permission of Moody's Investors' Service. Issues for refunding, acquisitions, working capital, and issues of insurance companies, banks, etc., are excluded, as well as half of the issues for "Real Estate Mortgages" and "General Corporate Purposes," which are classed as indeterminate. They are in any case a very small percentage of the total. Federal issues are excluded, but the figure for October 1934 includes 530 millions issued by the Home Owners' Loan Corporation, because they were for the purpose of financing additions and improvements. According to the terminology adopted in this book, the case for including this item is at best a weak one.

(4) Corporate Earnings. The figures of earnings of all corporations, *i.e.*, receipts less statutory deductions, are from Statistics of Income, *Report of the Commissioner of Internal Revenue*, Treasury Department, and have been corrected by W. L. Crum for dividends received from other corporations. The author's thanks are due to Professor Crum for

kindly permitting the use of unpublished material. The items for 1931, 1932, and 1933, being negative, could not be plotted.

(5) New Incorporations. Annual. Figures are for new enterprises with an authorized capital of $100,000 or more. They were taken from the *Statistical Abstract of the United States*, 1928, p. 309. After that year, this information was discontinued and would have to be unearthed in the 48 statehouses, an undertaking much beyond the means at the disposal of the writer.

CHART LV. GERMANY. LOG SCALE

(1) Call Rate. 1924-1935. This is the monthly average of the call money rate (*Taggeld*), taken for 1925 to 1935 from the Institut fur Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936, p. 112. The figures for 1924 are from the International Abstract of Economic Statistics, 1919-1930, p. 93 (International Conference of Economic Services).

(2) Stock Price Index. 1924–1935. This is the monthly index of the Statistische Reichsamt (1924-1926 = 100). It covers about 325 stocks, including mining and heavy industries, manufacturing, trade and transportation, and banking. See Otto Donner, Die Kursbildung am Aktienmarkt, *Vierteljahrshefte zur Konjunkturforschung, Sonderheft* 36, 1934. The Berlin Stock Exchange was closed from July 1931 to April 1932.

(3) Stock Exchange Turnover Tax Receipts. In order to get some sort of index of stock exchange transactions, the monthly yield of the stock exchange turnover tax (taken from the Institute für Konjunkturforschung, *Konjunktur-Statistisches Handbuch*, 1936, p. 115) was adjusted for changes in the rate of taxation.

(4) Industrial Stock Issues (on the German Stock Exchanges). Annual figures taken by permission from *Die Wirtschaftskurve* (a publication affiliated to the *Frankfurter Zeitung*), vol. XIII, 1934, p. 267. The reference is to compilations of the Statistische Reichsamt. For 1933 the figures include the *Steuergutscheine*, see Chap. XV, sec. F. The 1934 figure is for the first 10 months.

(5) Industrial Bond Issues. See Series (4).

(6) Dividends. Per cent per annum. For source and method of calculation, see Chart XXXVIII (5).

(7) Failures. Annual. 1925-1934. Figures are from the *Statistisches Jahrbuch für das Deutsche Reich*, vol. LV, 1934, p. 368, and represent nominal capital of companies instituting liquidation or bankruptcy proceedings (*Einleitung des Liquidationsverfahrens* or *Konkurseroffnung*). Of course, this does not include reorganizations etc., which economically may be equivalent to failures.

(8) Foundations. Annual. 1925-1935. Total share capital of new enterprises taken from the *Statistisches Jahrbuch fur das Deutsche Reich.*

CHART LVI. GREAT BRITAIN. LOG SCALE

(1) London Town Clearings (as Distinguished from Metropolitan and Country Clearings). Monthly figures for three weeks covering two stock exchange settlement days, consols settlement day and the fourth of the following month. They were taken, by permission, from the Monthly Bulletins of the London and Cambridge Economic Service.

(2) Industrial Stock Prices. The old index (1919–1924) is an arithmetic average of the price relatives of 20 industrial ordinary shares, (1913 = 100). The last day of the month to December 1922, and then the middle of the month. Weighting is based on 1907 Census of Production. The new index (from 1924 on) is on the base 1924 = 100, and includes prices of the shares of over 90 companies, operating principally or exclusively in the United Kingdom (banks and railways are excluded). It is an arithmetic average of midmonthly figures. Industrial groups are weighted according to the 1924 Census net output figures.

individual stocks according to their market values in 1924. The new index was adjusted to the old one by putting the 1924 average equal to 163 (see *Special Memo* 33 of the London and Cambridge Economic Service, A New Index of Prices of Securities by A. L. Bowley, G. L. Schwarz, and K. C. Smith, p. 14). Both indices were used with the permission of the London and Cambridge Economic Service.

(3) London Call Rate. Day-to-day rate. Averages for the week ending the fifteenth of each month, taken, by permission, from the London and Cambridge Economic Service *Monthly Bulletins*.

(4) Money at Short Notice to Stock Exchange. Data are for 10 London Clearing Banks from the Report of the Committee on Finance and Industry, 1931, p. 284. They do not include money at call or money at short notice to the money market. In the case of the National Bank, Ltd., only figures relating to offices in England were included. Some items in the earlier years are estimates.

CHART LVII. ISSUES FOR "NEW CAPITAL." GREAT BRITAIN. ANNUAL

New issues, domestic and foreign (conversions excluded), of stocks and bonds taken from the *London Economist, Annual Commercial History and Review*.

(1) Railways. British, colonial, and foreign. In 1918 and 1919, only colonial and foreign, and in 1916 and 1917 only British and foreign.

(2) Mines. Includes Australasian, South African, and others.

(3) Public Utilities. Include electric light, power, and telegraph; tramway and omnibus; gas and water.

(4) Shipping. Docks, harbor, and shipping.

(5) Iron and Steel. Iron, steel, coal, and engineering.

(6) Real Estate.

(7) Motors. Motor traction and motorcar manufacturing.

(8) Rubber.

(9) Oil.

CHART LVIII. UNITED STATES.
CONSPECTUS OF FEDERAL RESERVE BANK OPERATIONS.
ARITHMETIC SCALE

All the series were taken from the *Annual Reports* of the Federal Reserve Board and the *Federal Reserve Bulletins*.

(1) Total Reserves. This includes nonreserve cash reported separately after December 1922. Total reserves are called due from the United States Treasury after January 1934. Gold included in these accounts is valued at $20.67 per fine ounce before January 1934 and $35 after that.

(2) United States Securities.

(3) Bills Bought.

(4) Float. From January 1919 to December 1926 this series represents the difference between Uncollected Items and Deferred Availability, Notes of Other Reserve Banks being included in Deferred Availability. From January 1927 to March 1936 the series represents the sum of Float as reported and Notes of Other Reserve Banks (separately reported after December 1926).

(5) Notes in Circulation. The items included in this series are, from January 1919 to May 1924, Total Notes in Circulation and Federal Reserve Bank Notes in Circulation; from June 1924 to December 1926, Federal Reserve Notes in Circulation; from January 1927 to March 1936, Federal Reserve Notes Outside the Federal Reserve Banks, Federal Reserve Notes Held by Other Federal Reserve Banks, and Federal Reserve Bank Notes in Circulation.

(6) Bills Discounted.
(7) Government Deposits.
(8) Reserve Account of Member Banks Calculated—*i.e.*,

$$(1) + (2) + (3) + (4) - (5) + (6) - (7).$$

(9) Actual Reserve Account of Member Banks.

CHART LIX. UNITED STATES. MAJOR RESERVE FACTORS AND CENTRAL MARKET RATES. ARITHMETIC SCALE

(A) Total Reserves. See Chart LVIII (1).
(B) = A plus United States Securities. See Chart LVIII (2).
(C) = B plus Bills Bought. See Chart LVIII (3).
(D) = C plus Float. See Chart LVIII (4).
(E) = D minus Notes in Circulation. See Chart LVIII (5).
(F) = Bills Discounted. See Chart LVIII (6).
(G) Rate of the Federal Reserve Bank of New York. From *Federal Reserve Bulletin.*
(H) Commercial Paper Rate. Rate on 60- to 90-day prime commercial paper at New York, taken, by permission, from the Standard Trade and Securities Service, *Standard Statistical Bulletins.*
(I) Month-to-month Changes in Total Reserves.
(J) Yield on Government Certificates. Same source as Series (II).

CHART LX. BANK OF ENGLAND FIGURES. LOG SCALE

All figures are annual averages of Wednesday figures, as published in the *Bankers' Almanac and Yearbook* and the Bank of England's *Statistical Summaries.* On Nov. 22, 1928, the note issues of the Bank of England and of the Currency Note Commissioners were amalgamated, and the amount of the fiduciary note issue was fixed at 260 million pounds. Therefore, figures of reserves and securities are not comparable. On Aug. 5, 1931, the maximum of the fiduciary note issue was increased to 275 million pounds, and in April 1933 it was put back to 260 million pounds. No attempt has been made to present figures about notes, reserves, or securities for 1928. From 1929 to 1934 Other Securities equal Discounts and Advances plus Securities.

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