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BUSINESS CYCLES

Their Nature, Cause, and Control

PRENTICE-HALL, ECONOMICS SERIES

E. A. J. JOHNSON, *Consulting Editor*

BUSINESS CYCLES

Their Nature, Cause, and Control

by

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SECOND EDITION

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To

NEM *and* MARTY

PREFACE

The purpose of this book is to supply a brief, simple, but reasonably comprehensive introduction to the subject of business cycles. A description of cyclical behavior, a survey of business cycle theories, and an analysis of proposed methods of control are included.

It is hoped that by having in a single volume the threefold subject of description, causation, and control, the reader will be better able to see the full scope of cycle problems, and better served in his study of them.

The book is divided into three parts. The first part is concerned with description. It answers the question: What do cycles look like, and what happens to business in the course thereof? The second part has to do with causation. It sets forth the principal theories now current as to why cyclical fluctuations occur. It is mainly expository and indulges only in such limited criticism as will enable the reader to see how one theory may develop into or give place to another. The third part is devoted to the problem of control. It sets forth the various ways by which the extent of economic fluctuations may be reduced, and subjects these proposals to critical analysis.

The revised edition leaves unchanged the pattern of the original. The changes that have been made are designed to bring the historical and descriptive matter up to date, and to take account of recent discussions and developments in the field, particularly in respect to problems of monetary and fiscal policy.

In Part I, some material on building cycles has been added to Chapter 1; the account of current indexes in Chapter 3 has been brought up to date; substantial changes and additions have been made in Chapter 4 on Measurement and Description of Cycles; Chapter 6 has some additional material on depressions; and a new chapter (Chapter 7) has been added giving an account of the war cycle 1940–1946, and the post-war cycle since 1946.

No substantial changes have been made in Part II. Some parts have been rewritten for greater clarity.

In Part III the three chapters on monetary management, Chapters 18–20, have been brought abreast of current discussions, particularly Chapter 20, International Monetary Relations, which has been completely rewritten. Similar changes have been incorporated in Chapters 21–23, on public expenditures and fiscal policy. Chapter 23, Stabilizing the Volume of Consumption, has been substantially revised and expanded to give adequate consideration to outstanding aspects of fiscal policy.

As in the first edition, select references are given in the brief bibliographies at the end of each part, and appropriate references to specific subjects are made in the course of the chapters. No attempt has been made to develop elaborate footnotes. This book is not a work of research. The materials are familiar, and the author's debt to the literature of business cycles is evident in every chapter.

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BUSINESS CYCLES

Part I

Description

1

BUSINESS FLUCTUATIONS OF VARIOUS KINDS

THE STATISTICAL RECORDS of business activity, particularly as exhibited in the graphic form of charts, indicate that the course of business, like true love, is not smooth. In every graphic record, whether of a single activity, like bank clearings, or railway tonnage, or steel production; or of business in general, as shown in the Federal Reserve Board's Index of Industrial Production, or in the Department of Commerce series of National Income or Gross National Product; or prices, such as wholesale prices or interest rates, fluctuation rather than stability is the rule.

These fluctuations of business are of many kinds. Some are abrupt, isolated, discontinuous, like the great economic changes brought about in the world by the First World War. Some are continuous for long periods of time in the same direction, such as expansion of output, or in some cases contraction of output. Other changes are essentially fluctuations of a rhythmic nature, such as the changes due to the seasons, or those longer periods of ebb and flow of business activity commonly called "business cycles." Some of these fluctuations are limited to specific fields; others, such as business cycles, tend to spread over the entire field of business activity and reflect changes in what may be called "business as a whole."

Even this brief statement has disclosed the fact that business cycles are but one example of a number of fluctuations to be found in the activities of modern business. The purpose of this chapter is to examine briefly these various kinds of fluctuations so that the particular kind of fluctuation to be studied in this book—that

is, business cycles—can be segregated and distinguished from the others.

Our purpose will best be served by some classification of these fluctuations. The most common classification is as follows:

1. Secular trends.
2. Seasonal fluctuations.
3. Cyclical fluctuations.
4. Miscellaneous random fluctuations.

Secular trends represent the upward or downward course of sustained development exhibited in any activity over periods that are relatively long.

Seasonal fluctuations are the variations in activity that take place within the period of a calendar year, and presumably are due to causes connected directly or indirectly with the physical season.

Cyclical fluctuations are wavelike fluctuations of business activity characterized by recurring phases of expansion and contraction in periods longer than a year.

Miscellaneous random fluctuations are irregular, uncyclical variations of activity due to the incessant interference of all sorts of causes affecting business. They are "accidental" fluctuations.

As we shall see later on, a statistical technique has been developed for separating the cyclical fluctuations from secular trend and seasonal variation in the indexes which measure the activity of business, although the elimination of random fluctuations has not yet been attained.

An alternative classification, based on the distinction between changes in economic structure and fluctuations within a given structure, is offered by Ernst Wagemann:[1]

1. "Isolated changes, or changes in structure."

   (a) "Discontinuous changes, involving a breach in the course of development." These range from the miscellaneous minor changes, which we may call "accidental," to fundamental changes in the whole "structure" of economic organization such as were caused by the First World War.

   (b) "Continuous changes," or changes that exhibit the course of development, expansion, contraction, continuous transformation. These are essentially "secular trends."

[1] E. Wagemann, *Economic Rhythm* (New York: McGraw-Hill Book Co., Inc., 1930), Chapter 3, "The Basic Forms of Economic Movement."

2. "Periodical fluctuations."

(a) "Fluctuations occurring in a fixed rhythm." These are seasonal fluctuations, covering all fluctuations with a regularly recurring invariable interval.

(b) "Fluctuations occurring in a free rhythm." These include "cycles" of all kinds that show a continual recurrence of expansion and contraction, but with no fixed or invariable period. As we shall see, this type includes not only the familiar "business cycle" but any variation of a proved cyclical character.[2]

Out of these classifications may be drawn the observation that there are two broad types of change in business activity. There is (1) the nonrecurring, nonrhythmic change, such as is exemplified by trends, by accidental or random fluctuations, and by important structural changes; and there is (2) the recurring or rhythmic fluctuation such as is exemplified by the season on the one hand and the various cyclical fluctuations on the other.

The detailed discussion that follows is organized according to this fundamental distinction.

Nonrecurring or Nonrhythmic Change

Trends

A trend may be defined as a continued and continuous movement of the data of any activity in a recognizable direction over a period of time that is long relative to the business cycle.

Such movements are commonly thought of as upward. For example, industrial production in all developed countries has an upward trend. For this reason, secular trend is sometimes regarded as the factor of growth, arising from the effects of (a) increasing population, (b) increasing economic efficiency through education, invention, improvements in technique, and so on, and (c) the gradual growth of accumulated wealth and productive capital. But it is more exact to observe that trends may be downward as well as upward and may even reverse themselves from time to time. Thus, for several decades, the volume of railway construction in the United States has had a downward trend. There is evidence that interest rates during the nineteenth century had a

[2] The distinction here brought out between fixed rhythm and free rhythm is similar to that developed by Irving Fisher in *Booms and Depressions*. Fisher distinguishes "forced" cycles from "free" cycles. "Forced" cycles are all cycles forced on the business system from outside—all seasonal fluctuations, for example. "Free" cycles are not forced from outside. They arise within the business mechanism itself.

marked downward trend. Some time series have no apparent trend at all, or, if one cares to use an alternative phrase, show a horizontal trend—for example, the percentage of unemployed workers in England before the First World War, or the percentage of unemployed in the United States in the period 1897 to 1926.[3]

As suggested before, it is possible for series to show reversing trends—sometimes upward and other times downward. This trend might be said to exist in the case of wholesale prices in the United States, which, over considerable periods of time, move upward, to move down again over relatively equal periods. Here, however, is raised a problem of classification and definition. Possibly such fluctuations should be called "long cycles" rather than "reversing trends"; and this question may be raised in regard to other aspects of business activity as well as prices. After all, production may not grow indefinitely; population may cease to grow and begin to decline. Possibly even output series, were they followed long enough, would show reversing trends. Certainly this tendency would be true in respect to the output of many individual commodities which find their way into use, rise to some importance, and eventually are displaced by something else. This experience is presumably the explanation of the downward trend which replaced what, for a long while, was an upward trend in railway construction. However, these are remote matters and can be neglected in this study. We will continue to use the term *trend,* therefore, for movements in one direction over periods that are long—that is, long in relation to the business cycle.[4]

Irregular (or accidental) fluctuations

It is apparent that there are many nonrecurring causes of fluctuations that affect business as a whole. Fires, storms, floods or other

[3] P. H. Douglas and A. Director, *The Problem of Unemployment* (New York: The Macmillan Company, 1931), p. 33.

[4] If one will study the admirable series of measurements set up by Carl Snyder in the chapter on "Economic Growth" in his *Business Cycles and Business Measurements* (New York, The Macmillan Company, 1927), he cannot fail to be impressed by the evidences of the persistence and stability of the growth factor in many of the important processes of our economic life. Trends really are trends; and though they may reverse themselves, the reversal lies in an uncertain future.

In the *Encyclopaedia of the Social Sciences* trends are defined as "cumulative, irreversible changes," as compared with "cancellable reversible changes" represented by cyclical fluctuations of various kinds. Vol. XIV, 631.

disasters, strikes, revolutions, wars, elections, legislative changes, and judicial decisions may cause business to prosper or to decline to some degree and for some longer or shorter time.

Such causes differ from trends, cycles, and seasonal fluctuations in that they are relatively noncalculable, not easily foreseen or guarded against, and not easily removed.

Theoretically, such factors, being in the nature of random factors, might at any given moment be expected to cancel out. By the law of probability, this should occur provided the factors are fairly numerous and are independent of each other in origin, and provided none preponderates over the rest. These conditions are rarely fulfilled since the factors are likely to be mutually interrelated or else dominated by one or two powerful ones. The result is the production of fluctuations in business, often considerable in amplitude, that are not explainable by trend, cycle, or seasonal variation.

The most powerful of these "nonrecurring" causes of business fluctuations is war. Minor wars might be classed with strikes, floods, or other "accidental" causes; but major wars constitute such an important interference with the ordinary course of business as to stand in a class by themselves. Major wars will cause an abnormal expansion of business activity, and when ended, they may precipitate a period of considerable depression. They may so modify the economic background as to leave as a permanent legacy to society a considerable array of what are referred to later as "structural changes."

It might be said that it is largely this collection of accidental variations that make business cycles (when considered apart from trend and seasonal variation) differ from each other. It is this, too, which makes prediction and forecasting of business conditions so difficult. As Pigou says, cycles are all of the same family, but no two are twins. And one must therefore note that, although business cycles may show a certain pattern or type, each cycle differs from others in some aspects. Therefore, business forecasters, if they do not follow a purely mechanical procedure, take pains to note marked departures from the typical or expected course of events and to find some acceptable explanation to account for the irregularity.

Structural changes

At times these irregular (in the sense of isolated, nonrecurring) changes in the economic process are of such magnitude that they are better designated as "structural changes." Structural changes, to follow Wagemann,[5] are organic, constitutional transformations of the economic system. Thus the change in the rate of growth of the population due to birth control is a structural change. The First World War introduced many structural changes, as, for example, turning the United States from a debtor to a creditor nation and Germany from a creditor to a debtor nation; and the hindrances to trade by new territorial alignments and tariff barriers. Again, the setting up of new central banking systems, such as the Federal Reserve System in the United States, can be classified as a structural change.

The growth of agriculture in the New World in the third quarter of the nineteenth century led to a structural change that was essentially the cause of chronic depression in England and Germany in the 1880's. The unification of Germany in 1870–1871 was a structural change. The great gold discoveries in South Africa and changes in the technique of gold mining in the late 1880's and 1890's were structural changes. England's adoption of free trade in the 1840's was a structural change; so was the withdrawal of Russia from the relatively uncontrolled European economy after the Revolution; so also was the technological revolution of the last two decades; and so on.

Such important modifications in the essential elements of economic society may profoundly affect the behavior of the recurring and cyclical changes. And doubtless this helps to account for the prolonged and world-wide depression of the 1870's, following the Civil War in America and the Franco-Prussian War in Europe. And again the profound depression of recent times, so much greater and more widespread than any that the world has yet known, had its roots in structural changes.

What structural changes may result from the Second World War is a matter of conjecture. But one might name, among others, the great change in the size of the public debt of the United States and the problems attendant thereon; the possible economic

[5] Wagemann, *Economic Rhythm*, p. 26.

consequences of the use of atomic energy; the probable permanent eclipse of the gold standard of the past; the change in the pattern of economic international relations arising from the growing isolation, one from the other, of various political areas of the world, and from the expansion of public policies in this country and that aiming at stability of internal employment and prices.

Recurring Fluctuations

Seasonal fluctuations

Seasonal fluctuations are imposed upon business by the fixed rhythm of the seasons and are characterized by a recognized periodicity in time.

Some of these fluctuations are "natural" fluctuations in either demand or supply, or both, due to the physical influence of the season. Others are "artificial" or "conventional," originating doubtless in the physical or meteorological season, but now dependent on institutions, customs, regulations, and law.

The output of agricultural commodities in temperate zones, at least, is obviously affected by seasonal changes. Along with changes in the activity of agriculturists go changes in railway traffic, in mail-order sales, and in the activities and payments of many industries. Similarly, road building, house construction, lumbering, and all out-of-door occupations have marked seasonal swings.

The demand for goods and services undergoes similar natural fluctuations. Tourist travel and sports and the demand for clothes, for fuel, for automobiles, and for certain types of food are seasonal and, unless the production is adapted to storage, these factors impose seasonal variations in output on a supply which otherwise would be regular.

The conventional aspect of seasonal variation in activity is illustrated by the increases in retail trade at Christmas and Easter, by the variations in banking activity due to the customary interest and dividend periods, by the quarterly (or other periodic) receipts of taxes, and so on. These are determined by custom and convention and, although not unavoidable, have effects similar to variations due to physical and meteorological causes. Some of the apparently purely physical backgrounds of seasonal variation are often partly conventional. Thus the house-building industry has always been seasonal—busy in summer, dull in winter. But

changes in building methods have made winter building much more feasible than formerly, and it seems that, if the business is still seasonal, it is more because of habit than necessity. In short, a physical season has been transformed into a relatively conventional season.

Where the data are reported as monthly aggregates, an odd seasonal variation is introduced by the conventions of the calendar. Thus February, except in Leap Year, is nearly 10 per cent shorter than January or March, and February output tends to show a proportional dip. Similarly, monthly aggregates are affected by the distribution of Sundays and holidays. The variation thus exhibited may be called a *spurious seasonal variation.* The statistical effect of this spurious variation, which after all is only a slight form of deception, can be reasonably avoided by expressing activity during each month as a daily average, found by dividing the activity index by the number of actual working days.[6]

The sum of these direct seasonal influences amounts to a formidable total, which, when taken in conjunction with various repercussions on the industry of the country as a whole, together with similar consequences from similar causes in all countries of the world, is apparently capable of producing short-time variations of industry away from the normal line of development and trend. In practice, however, this potentiality is considerably reduced, for a number of reasons.

For one thing, the actual seasonality of economic activity due to the operation of these changes in demand and supply is affected by conscious measures designed to introduce stability. Thus the production of goods subject to seasonal variations in demand may be regularized by storage or by appropriate price or advertising policies designed to stimulate off-season buying. The variations in consumption apparently imposed by seasonal production of crops are almost completely eliminated by the proper processes of storage and marketing. Many other examples could be cited.

Furthermore, the seasonal fluctuation observed in any given economic activity is subject to change from circumstances not connected with any conscious program of stabilization. Seasonal fluc-

[6] That this does not completely solve the problem is well indicated by E. C. Bratt in his *Business Cycles and Forecasting,* 3rd Edition (Chicago: Richard D. Irwin Inc. 1948), pp. 10–13.

tuations in automobile manufacture have gradually changed as good roads and closed cars made all-year driving more common. Likewise, the marked seasonal fluctuation in the New York money market formerly associated with the moving of the crops has been notably reduced as a consequence of the organization of the Federal Reserve System.

Finally, the economic consequences of seasons, whether climatic or conventional, affect so many industries so differently, and are themselves so scattered over all the months of the year, that the business of a country as a whole is substantially less subject to seasonal variations than any of its component parts. In the business of the world, even more than in the business of any given economic area, seasonal variations tend to cancel out.

A quasi-seasonal fluctuation of some kinds of economic activities is found within periods shorter than the seasons as usually defined. These fluctuations take place within the month, the week, and the day. There may be fluctuations of a regular sort within the hour.

A German investigation described by Wagemann[7] shows these variations in retail trade. As to monthly variations, retail sales are high in the last days of the month, falling away thereafter—at first sharply, then gradually. The fall is checked briefly at mid-month and then continues until the end-of-the-month activity begins. This variation is attributed to rhythm in the buying habits of the salaried classes.

Retail business is heavy during the week end, light in midweek. This variation arises apparently from the buying habits of the wage earners, and the rhythm varies with different classes. Even the day shows its rhythm, with a slight liveliness in the late morning hours and a maximum activity toward the end of the day—a rhythm obviously imposed by employment conditions and by the personal habits of the consumer.

Similarly, there is a marked weekly variation in the sales of gasoline, with heavy bulges at week ends; and a daily variation in the output of electricity, with a normal bulge in the late hours of the day.[8] Perhaps such changes may be regarded as negligible in a study of industrial fluctuations, but they are significant enough to

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[7] Wagemann, *Economic Rhythm*, pp. 60–61.

[8] See the charts in W. I. King, *The Causes of Economic Fluctuation* (New York: The Ronald Press Co., 1938), p. 11.

modify the business habits of many concerns. As a result, electric power companies and street railway and bus companies have to think in terms of peak loads as normal incidents of the day. And what would perhaps appear to be excess capacity turns out to be necessary facilities for the performance of the job.

Cyclical fluctuations

It is possible by various statistical devices, which will be explained in detail in Chapter 2, to eliminate from a time series both the trend and the seasonal variation—or, if desired, the seasonal fluctuations only. When this is done, most measures of business activity show another well-marked series of fluctuations, which differ from trends in being alternating ebbs and flows rather than continuous movement in one direction, and from seasonal fluctuations in occurring within longer, and at the same time less regular, periods of time.

These fluctuations are characterized by alternating waves of expansion and contraction. They do not have a fixed rhythm, but they are cyclical in that the phases of contraction and expansion recur frequently and in fairly similar patterns. These patterns are most marked in those countries which are built up on "business" rather than agriculture, and have been particularly notable in England and the United States for well over one hundred years.

These fluctuations are properly called "cyclical fluctuations," or "cycles." They may be distinguished from seasonal fluctuations by the nature of their rhythm. That is to say, cycles have a free rhythm, seasons (at least the natural seasons) have a fixed rhythm. Cycles have irregular timing but a recognizable pattern; seasons have a (practically) fixed timing as well as a recognizable pattern.

The tendency to cyclical variation is seen in many aspects of business activity. The production of steel, the sale of automobiles, the movement of freight, building construction, wages, interest rates, profits, the level of wholesale prices, imports and exports, stock exchange prices, new issues of securities, the volume of savings, bank debits, employment, and even marriage and birth rates exhibit cyclical variations.

These recurrent fluctuations in individual business activities may be called, to follow Mitchell, "specific cycles."

The most characteristic aspect of these cyclical fluctuations, however, is their tendency toward simultaneous appearance in all the important aspects of business. The successive phases that mark a cycle tend to spread more or less promptly over a large part of the economic processes of a country. In addition, these relatively synchronous fluctuations in so many aspects of industry appear also in various countries at much the same time. Indeed, in the past, these international similarities have tended to become more and more marked. Especially is this true since 1870, as more and more countries found themselves enmeshed in the typical developments of modern capitalism and, therefore, exposed to the conditions that, under capitalism, as we shall see, tend to bring about cyclical fluctuations.

In short, the great number of specific cycles that appear in our economic processes are clearly interrelated. And this "congeries of interrelated phenomena," to use Mitchell's phrase, may be defined as a *business cycle.* That is to say, business cycles are fluctuations in general business activity that appear through the interrelated fluctuations of innumerable specific cycles.

(1) *Minor and major cycles.* Both specific cycles and business cycles, properly speaking, include all fluctuations that follow the general pattern of alternating expansion and contraction of activity. But further examination of the history of these episodes discloses such a considerable difference in the duration and amplitude of their fluctuations that it may be appropriate to make a distinction between *minor cycles* and *major cycles.*

Major cycles may be defined as the fluctuation of business activity occurring between successive "crises."

In the nineteenth century, students of business were impressed by the dramatic breakdown that from time to time (about once a decade) interrupted the relatively even tenor of economic activity. These interruptions were usually called "commercial crises." They were regarded as isolated episodes rather than an integral part of a continuous economic pattern. But as early as 1862 Clement Juglar, French economist,[9] showed that crises are not isolated phenomena but part of a cyclical fluctuation of trade, and that

[9] Clement Juglar, *Des Crises Commerciales,* Second Edition, Paris, Librairie Guillaumin et Cie, 1889).

periods of prosperity, crisis, and liquidation follow each other always in the same order. Thereafter, economists began to use the term "commercial cycle," and to locate these cycles between the recurring appearances of crisis.

Cassel, the Swedish economist, in his *Theory of Social Economy,* set up the years 1873, 1882, 1890, 1900, and 1907 as locating-points for cycles in Germany, on the ground that each of these years was a year of recognized crisis. Similarly, Mitchell, in his *Business Cycles and Unemployment,* begins his section on the nature of business cycles as follows: "Fifteen times within the past hundred and ten years American business has passed through a 'crisis.' The list of crisis years (1812, 1818, 1825, 1837, 1847, 1857, 1873, 1884, 1890, 1893, 1903, 1907, 1910, 1913, 1920) shows that the periods between successive crises have varied considerably in length."

Unfortunately the term "crisis" lacks precise meaning. Commonly it is associated with the occurrence of major disturbances in the money market, which when severe, take on the character of a "panic." But this sort of disturbance does not always coincide with the beginning of a major contraction in activity. There have been major down-turns such as that of 1929 that were not accompanied by even such crisis conditions as occurred in 1907. And some of the recognizable crises, for example that of 1884 or of 1933, came not at the beginning but at the end of a period of contraction.

Perhaps, therefore, it would be better to say that major cycles constitute the intervals between successive major downturns of business activity or between major "recessions." What is a major downturn would necessarily be a matter of judgment; but it would be commonly agreed that the downturns of 1924 or 1927 were not major downturns, whereas the downturn of 1929 definitely was.

On this basis, Hansen recognizes twelve major cycles in the hundred-year period 1837–1937 with an average duration of 8.33 years and ten major cycles in the period 1857–1937 with an average duration of 8.0 years.[10]

These cycles are sometimes known as Juglar cycles, in recognition of Juglar's pioneer work in establishing the cyclical nature of business fluctuations.

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[10] A. H. Hansen, *Fiscal Policy and Business Cycles* (New York: W. W. Norton and Company, Inc., 1941), pp. 16–19.

It would seem from the records of business fluctuations that the upswings of business in the major cycle, less often the downswings, are interrupted by minor downswings or upswings as the case may be. For example the expansion of the 1920's was twice interrupted by minor downswings, first in 1924 and again in 1927. Similarly, the severe contraction of the 1890's was interrupted by the brief recovery of 1895.

Measured from downturn to downturn, irrespective of the magnitude thereof, cycles are shorter and more numerous than when measured from major downturn to major downturn. In the period 1857–1937 in the United States, Hansen finds 23 minor cycles with an average duration of 3.48 years, as compared with ten major cycles of an average length of 8.0 years.

These shorter cycles may be called "minor cycles." In late years the evidence is that they average close to 40 months.

Joseph Kitchin makes this distinction between major and minor cycles, after a careful measurement of certain indexes during the years 1890–1922 in both Great Britain and the United States.[11] The indexes examined were bank clearings, wholesale prices, and interest rates. By calculating the average interval between successive maxima and again between successive minima, he finds a strong tendency toward a minor cycle averaging 3⅓ years, or 40 months. This finding, moreover, is confirmed by an investigation of W. S. Crum, who, from an analysis of the behavior of interest rates on commercial paper also finds an average period of 40 months.[12]

Kitchin proceeds to state that major cycles are merely aggregates, usually of two, less commonly of three, minor cycles, and that the upper limits of these major cycles are marked by a high maximum of the indexes, and sometimes a panic. The average of these major cycles is eight years, and the most usual interval seven or ten years. These major cycles correspond to the Juglar cycles previously described.

Thus business cycles may be classified into two broad divisions (the boundaries of which cannot, of course, be precise): (1) major or Juglar cycles, and (2) minor cycles.

Of these two, the major cycle is economically the more impor-

[11] *Review of Economic Statistics,* January 1923.
[12] *Ibid.*

tant, and, as far as the public is concerned, the one in which it is interested. Minor oscillations are not dramatic; they may scarcely be recognized as they go by. Sometimes they can be recognized only by scrutiny of statistical indexes; sometimes even some statistical indexes do not show them, as, for example, the downturn of 1927. But the major cycles are dramatic and have serious results. The social consequences of cycles, their effects on employment, on prices, and on the distribution of income between the various classes of society are impressive only when the cyclical fluctuation is well marked. From the point of view of the public, minor cycles might well be regarded not as cyclical fluctuations in the true sense but rather, to use the apt phrase of A. B. Adams, as periods of "oscillating equilibrium."

On the other hand, from the standpoint of scientific classification and for purposes of systematic analysis of the essential patterns of cyclical behavior, minor and major cycles do not differ in their fundamental behavior. The characteristic pattern of the cycle is found in both. In both occurs the normal sequence of prosperity, recession, depression, revival. Even the great depressions, such as 1873–1878, 1893–1897, and 1929–1933, although affected by abnormal and specific influences, display the underlying and essential features common to all cyclical fluctuations. It is for this reason that Mitchell in his classic studies uses the term *business cycle* for *all* cyclical fluctuations, whether minor or major.

Major and minor cycles, therefore, are subdivisions of the broad category of business cycles, which themselves may be taken to cover all *recurring* fluctuations of general business activity that take the form of alternating expansions and contractions in periods varying from one to ten or twelve years.

(2) *Building cycles.* There is some evidence that economic activity is subject to rhythmical fluctuations of a duration longer than the business cycle.

One of the most interesting of these longer variations, and one that may have considerable effects on the behavior of the shorter cycles, is the cycle of building construction.

Investigations into the volume of building, as reflected in building permits running back as far as 1830, indicate a cycle of build-

ing construction of remarkably regular duration.[13] These cycles run from fifteen to twenty years and average close to eighteen years in length. They are nearly twice as long as major cycles.

Between 1830 and 1934 there were six complete building cycles. An index of such cycles, based on per capita building values, shows troughs and peaks at the following dates:[14]

Low	*High*	*Low*
1830	1836	1843
1843	1853	1864
1864	1871	1878
1878	1890	1900
1900	1909	1918
1918	1925	1934

The average length of these cycles is seventeen and one-third years.

Various other indexes give substantially the same picture. Warren and Pearson show a composite index over the period 1830 to 1936 made from three separate indexes.[15] The cycle in this index averages eighteen years in length.

Because of the importance of the construction industry in respect to the volume of basic materials used and the large amount of labor employed, one would suppose that the behavior of business cycles would be substantially affected by these relatively long building cycles. Warren and Pearson hold that this is the case.[16] When recoveries coincide with expansion in construction, they will be long and vigorous. If they coincide with slumps in construction they will be short and anemic. Depressions that come in periods of building slump will be long and severe. Those that fall in periods of active building will be short and relatively mild.

(3) *Long waves.* We now come to fluctuations of even longer duration. For analysis of available statistical material indicates

[13] Warren and Pearson, *World Prices and the Building Industry* (New York: John Wiley and Sons, 1937), Chapter VI.

[14] See chart based on an index developed by J. R. Riggleman in Riggleman and Frisbie, *Business Statistics,* Second Edition. (New York: McGraw-Hill Book Co., Inc., 1938), p. 331.

[15] *Op. cit.,* p. 109.

[16] *Op. cit.,* Part II. See also A. H. Hansen, *Fiscal Policy and Business Cycles* (New York: W. W. Norton and Company, Inc., 1941), pp. 22–27.

the existence of what are commonly called "long waves" occurring in a 50- or 60-year cycle.

The starting point of these investigations is the well-established fact of wavelike fluctuations in the level of wholesale prices. Index numbers of wholesale prices, no matter how calculated, all show long waves of the price level, with the trend of prices changing direction five times in the 140-year period 1790 to 1930. The exact turning points vary with the index chosen, but the general picture is clear. Both in England and in the United States, where available data make it possible to construct an index number of prices covering the whole period involved, six periods of alternately rising and declining prices are disclosed.

The timing of these periods is as follows:

Rise	1790–1815
Fall	1815–1849
Rise:	
United States	1849–1865
Great Britain	1849–1873
Fall:	
United States	1865–1896
Great Britain	1873–1896
Rise	1896–1920
Fall	1920–1933

The symmetry of behavior in the price levels of two countries, broken only by the effect of the Civil War and the greenback standard in the United States, which hastened the peak of prices that ended the period of price rise, is a convincing proof of the existence of long waves in wholesale prices. What is disclosed is a price cycle with a wave length of some 50 years. And one might assume that, in the absence of interference by governments intent on controlling the value of money, there would have been a downward trend of prices, following 1920, until about the year 1945, thus finishing the downward phase begun in 1920, and rounding out, to the satisfaction of the statistician, the third great cycle of prices.

Furthermore, these long cycles of prices, which are generally attributed to variations in the rate of increase in world gold supply relative to the volume of production and trade, seem to be associated with (and may be the cause of) similar long cycles of economic activity, in such wise that the general trend of economic

activity is higher in periods of rising prices. The annals of business indicate a change in the ratio of prosperity to depression in periods of rising and falling prices, respectively. In periods of rising prices, prosperity tends to be long and depression short; in periods of falling prices, prosperity tends to be short and depression long. In his study of business annals, Thorp gives the evidence for the United States as follows:[17]

Ratio of years of prosperity to years of depression in periods of rising prices:

1790–1815	2.6
1849–1865	2.9
1896–1920	3.1

Ratio of years of prosperity to years of depression in periods of falling prices:

1815–1849	0.8
1865–1896	0.9

One might properly deduce from this evidence that the general pace of activity in the periods of rising prices would be greater than in the periods of falling prices. This expectation finds some confirmation in the evidence of the variation of economic activity offered by different investigators who claim to have discovered the existence of long waves, particularly in the studies of the Dutch economists Van Gelderen and de Wolff[18] and the Russian economist Kondratieff.[19] Of these studies, those of Kondratieff, being the most accessible, may serve to show the nature of the conclusions.

Kondratieff Cycles

Kondratieff collected and examined a great variety of time series extending over long periods. He found that long waves similar to those already recognized in British wholesale prices were to be observed also in interest yields on French and English government bonds and in French and English wages. Then he examined various series showing physical quantities or aggregate values. He put

[17] See Mitchell, *Business Cycles,* p. 411.

[18] *Der Lebendige Marxismus* (Jena: Thüringer Verlaganstalt, 1924), pp. 13–43.

[19] "Long Waves in Economic Life," *Review of Economic Statistics,* November, 1935. See a critical account of Kondratieff's work by G. Garvy, "Kondratieff's Theory of Long Cycles," *Review of Economic Statistics,* November, 1943.

these through a refined statistical process. The original data were computed on a per-capita basis, mathematical trend lines were calculated, and the deviations from the trend were computed and smoothed by nine-year moving averages (to remove cycles). The resultant index, when plotted, showed a wavelike deviation about the trend in the production of coal, pig iron, and lead in England, the consumption of coal in France, French imports and exports, English exports, and some others. The timing points of the various waves thus discovered tended to coincide in a broad sort of way, and to produce waves with more or less established timing, and of international scope. The data, which covered the period 1780–1920, seemed to establish 2½ long cycles, each full cycle being in the vicinity of 50 years.

Where there was no trend, as in the price series, the cycles took the form of a wavelike movement above and below the average. Where there was a trend, the cycles showed not so much a rise or fall as an acceleration or retardation of the rate of growth. The periods of these long cycles are as follows:

1st cycle.....	Incline:	1780–1790 to 1810–1817
	Decline:	1810–1817 to 1844–1851
2nd cycle.....	Incline:	1844–1851 to 1870–1875
	Decline:	1870–1875 to 1890–1896
3rd cycle.....	Incline:	1890–1896 to 1914–1920
	Decline:	1914–1920 to ?

On the face of it, this seems to indicate an ebb and flow in the pace of activity that is not accidental but due to causes in some way embedded in our industrial economy.[20] But the evidence cannot be regarded as more than suggestive. The data cover but two and one-half cycles, certainly not enough either to establish a probability of further cycles or to expect that the period 1920–1945, say, would be one in which the rate of progression would fall below the average. Furthermore, not all the series examined by Kondratieff showed unmistakable signs of these long cycles. There were no such waves in French cotton production or in American wool or sugar production. Therefore, one cannot re-

[20] It has been suggested that these causes may be (a) long variations in the rate of introduction and development of major technological innovations, such as the railroads, the automobile, the airplane, and so on; (b) preparations for wars and the wars themselves and their after-effects; (c) long cycles in the rate of production of gold supply with resulting rise and fall of prices over long periods. (See A. H. Hansen, *op. cit.*, pp. 27–41.)

gard these "Kondratieff cycles" as being established as the ordinary business cycle is established.

However, one may accept provisionally the possibility that the fundamental changes that go in economic activity include three kinds of cycles: the short or minor cycle, of some 40 months' duration; the major or Juglar cycle, made up of three minor cycles; and the Kondratieff cycle, made up of perhaps six Juglar cycles.[21] Furthermore, the possibility of such long waves or cycles gives rise to the suspicion that, if we knew more, what are commonly called "trends" might turn out to be merely segments of very long cycles. In the period for which we have knowledge, they are trends. For periods longer than this, they may be cycles. Even the longest trend may in time reverse itself. Even the long and relatively uninterrupted progress that seems to mark the "magnificent episode" of the nineteenth century may be but the rising phase of a very long cycle, the downward slope of which perhaps the twentieth century will eventually disclose. In short, cycles may well be the rule of all activity.

Conclusion

It seems clear from the evidence of statistics and business history that the economic activities of a country are subject to a great variety of fluctuations, and that some of these are so well marked as to lend themselves to identification and systematic classification. Seasonal variation, business cycles, commercial or intercrisis cycles, possibly long waves, and secular trends are recognizable forms of business fluctuation. Along with these occur a multitude of uncertain, unclassifiable, unpredictable changes, which may be called "accidental factors"; together with those more formidable but also nonrecurrent transformations of the whole economic scene called "structural change."

The business cycle, to the study of which this volume is devoted, is, then, one out of a number of fluctuations to which business is subject. It is tempting to assume that it is the most important. Its effects upon social welfare, and perhaps on the very continuance of modern capitalism, are profound. It is the most dramatic of fluctuations, and the one which has captured public attention and

[21] Cf. J. Schumpeter, "The Analysis of Economic Change," *Review of Economic Statistics*, May, 1935.

claimed the most prolonged and intense scrutiny on the part of economists.

What is proposed in this book is to examine in detail the characteristic behavior of business during the course of cycles; to set forth the explanations advanced by economists to account for them; and to analyze the various means by which these cyclical fluctuations might be reduced in the interests of the economic welfare of the people as a whole.

2

TIME SERIES AND THEIR ANALYSIS

THE STATISTICAL MATERIALS from which our knowledge of business cycles is derived take the form of "time series." "A time series is a number of quantitative measurements arranged in chronological sequence." [1]

Table 1 shows a time series showing the gross national product in the United States for the years 1939 to 1948.

TABLE 1*

Year	*Gross National Product* (billions of dollars)
1939	90.4
1940	100.5
1941	125.3
1942	159.6
1943	192.6
1944	212.2
1945	213.4
1946	209.3
1947	231.6
1948	255.9

* Source: Mid-Year Economic Report of the President, July 1949.

Time series in their original form may be prices such as wholesale prices or wages; or physical quantities such as pig iron output or railway tonnage; or ratios such as interest rates or reserve percentages; or values such as the national income and so on. To be most useful for study, the units of such time series should be available at frequent intervals—weekly, monthly, or quarterly. Annual data, useful in the absence of others, do not admit of fine

[1] *Encyclopaedia of the Social Sciences*, Vol. XIV, p. 629.

measurements of such relatively short-period fluctuations as business cycles.

Simple index numbers or relatives

As time series in their original form may not be well adapted to interpretation, it is usual to refine the raw series by various statistical processes. One convenient device is to reduce the actual data as given to a series of percentages of some convenient base.

Thus each item of the gross national product series can be expressed as a percentage of the year 1939 (or any convenient year). The result is given in Table 2.

TABLE 2

Year	*Relatives* (1939 = 100)
1939	100
1940	111.2
1941	138.6
1942	176.5
1943	213
1944	234.7
1945	236
1946	231.5
1947	259.2
1948	283

These percentages of a given base are sometimes called "simple index numbers." One would speak of the index for 1943 as 213. But it is considered more correct to call these numbers a series of "relatives." Such relatives enable comparison to be made of the changes in time series expressed in various units, such as pounds, tons, yards, bushels, and so forth. They are particularly useful in enabling various time series with similar fluctuations to be brought together and merged into a single series of index numbers. Such index numbers are called "composite index numbers."

Composite index numbers

A composite index number is designed to show the relative change in a whole group of related time series which all pertain to the same kind of activity.

Table 3 shows relatives for the production of steel ingots and lumber respectively, together with a composite index of production, found by averaging the two series of relatives.

TABLE 3*

1935–1939 Average = 100

Year	*Steel Ingots*	*Lumber*	*Composite Index*
1933	56	64	60
1934	63	65	64
1935	82	86	84
1936	115	105	110
1937	122	111	116.5
1938	68	92	80
1939	113	106	109.5

* Source: *Federal Reserve Bulletin.*

This composite index, an average of the two series in each year, may be taken to be an index of production in general, in so far as steel ingot and lumber output can be taken as representative samples. Were a larger number of series taken into account so as to cover a wide area of output, the composite index number so calculated might properly be called an "index of industrial production." Thus a composite index number enables one to get some idea of a magnitude that cannot be known by any direct observation—that is, the total volume of productive activity.

Weighted index numbers

As the different kinds of output in the total productive activity of the country clearly are not all of equal importance, a more accurate "index" of the general state of activity—that is to say, a better representative picture—is obtained by the device of weighted index numbers. Weighted index numbers are calculated by estimating the relative importance of each series in production (say, by the relative value produced or consumed in some given year) and, on the basis of this, assigning weights to the relatives included in the average. Thus if steel ingot and lumber production were estimated to be of the importance of 7 and 2 respectively, then, in taking the average, steel ingot relatives would be multiplied by 7 and lumber relatives by 2. For example:

Year	*Steel Ingot Output*	*Lumber Output*	*Composite Index*
1939	68×7	90×2	$\frac{(68 \times 7) + (90 \times 2)}{9} = 73.3$

The result is a series in which steel ingot changes exert more influence than lumber changes, and pull the index more in the direction indicated by the steel ingot series.

Most of the familiar time series which are currently published are weighted in this fashion. Thus the price index of the Bureau of Labor Statistics is an aggregate of many prices, each weighted by the consumption of the article in question in a basic year, and the total reduced to percentages of the data for the year 1926. Again, the index of industrial production of the Federal Reserve Board is a weighted average of numerous relatives, all expressed as percentages of the average of their respective series for the years 1936–1939 inclusive. The weights in this case are determined by the proportion of value-added in the respective industries to total value-added.

Such refined index numbers (and, of course, any time series) may be graphically represented by curves drawn upon a chart, a procedure that facilitates the understanding and interpretation of what might otherwise seem abstract.

Obtaining comparable scales of variation

In putting together composite index numbers, one often finds great differences in the variations of the individual time series. Thus, though all series have the same general pattern and commonly show much the same timing in the occurrence of expansion and contraction, they do not show the same "amplitude" of change. Some swing very widely; others have but small variation. Thus the production of capital goods varies much more widely through business cycles than the production of consumers' goods. Yet these different amplitudes are all expressions of the same general cyclical fluctuation.

Unless some allowance is made for these differences, the composite index will be disproportionately influenced by the movements of the more fluctuating series, cyclical changes will be exaggerated, and the timing of changes in the index may be distorted. These defects can be avoided by reducing all series to a similar scale.

Having first been expressed as deviations from the trend (see below chart page 32), each series is divided by its own average or

standard deviation. Thus all series by being expressed in units of deviation are brought to a comparable scale.[2]

The reader will find various charts in which the scale is in units of either average or standard deviation—for example, the charts formerly used in the monthly survey of business in the *Review of Economic Statistics* or the *American Telephone and Telegraph Company's Index of General Business.* Whenever either device is used, the purpose is to secure greater comparability of various time series, and particularly to be able to average them together into some significant composite index number.

Deflation, or correcting for price changes

Many of the available time series useful for business cycle study are expressed in values and represent money volume. As such, they are a product of two variables, activity and price multiplied together.

They do not adequately disclose the variation in activity, which is the essence of boom or depression. Thus, for example, an index of department-store sales expressed in dollar volume is not an unambiguous index. A rise of this index *may* mean that more goods are being sold, but it may also mean merely that prices are rising. It does not inform us definitely that activity has increased.

Hence it is desirable to eliminate the effect of price change and leave only the "real" change, which values tend to obscure. This is done by a process of "deflation," which consists of dividing the items of a series by corresponding items of an index of price.

For example, Table 4 is an index of *per capita* income in the United States from 1926 to 1932, a period during which an expansion was followed by a drastic reduction.

The national income is designed to serve as a measure of the goods and services annually produced, and the drastic reduction here displayed from 1929 to 1932 seems to indicate the great severity of the depression. But, during this period, the price level

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[2]

$$\text{Average deviation} = \frac{\text{sum of deviations of items from the average of the series}}{\text{number of items}}.$$

$$\text{Standard deviation} = \sqrt{\frac{\text{sum of squares of deviation}}{\text{number of items}}}$$

TABLE 4

Year	*Per Capita Income in the United States*
1926	$643
1927	624
1928	648
1929	668
1930	555
1931	434
1932	320

was also falling, so that the reduction in the volume of goods and services is not fairly represented, but in fact is exaggerated, by data expressed in values. Hence if changes in "real" income are to be shown, the data must be deflated by being divided by an index of the price level. This process is shown by Table 5.

TABLE 5

Year	*Per Capita Income*	*Price Index*	*Real Income* $\left(\frac{income}{price}\right)$
1926	$643	100	$643
1927	624	95	657
1928	648	97	668
1929	668	95	703
1930	555	86	645
1931	434	73	595
1932	320	65	492

The last column displays the deflated figures. This column is income in "constant dollars," in this case 1926 dollars. It is an index of "real" as compared with "money" income and, because of this, is a better representative of the changing flow of goods and services that constitutes the national income, particularly in periods of rapidly falling prices such as 1929–1932. Thus, whereas money incomes of 1932 were only 48 per cent of those of 1929, real incomes were 70 per cent of those of 1929.

A similar, but opposite situation is illustrated for a period of rising prices 1939–1947 by the following table taken from the Mid-Year Economic Report of the President, July 1948.

One will note that whereas dollar income of 1947 is well over double that of 1939, real income exceeds the 1939 level by less than 50 per cent. And further that despite the rise of money income since 1945, real income has declined.

Any time series expressed in money values can be satisfactorily

TABLE 6

Year	*Per Capita Disposable* Income, Current Dollars*	*Consumers Price Index* 1947 = 100	*Per Capita Income* 1947 Dollars
1939	536	62.4	859
1940	574	62.9	913
1941	691	66.1	1045
1942	863	73.2	1179
1943	964	77.6	1242
1944	1054	78.8	1338
1945	1070	80.7	1326
1946	1127	87.5	1288
1947	1205	100.0	1205

* (Disposable income is total personal income minus personal taxes.)

deflated in this way, provided an appropriate "deflator," or index of prices, is used.

Thus wages should be divided by an index of cost of living to get "real wages." Department-store sales should be deflated by an index of retail prices or preferably (if available) of department-store prices themselves. Both bank debits and national income, reflecting as they do the whole activity of the economy, should be divided by an index of general prices, including rents, wages, security prices, and other important values, as well as the customary wholesale prices. Whatever deflator is used, the result is an index which, so far as the process is correct, represents activity, not values.

Correcting for trend and seasonal fluctuation

Most time series in their original form are not properly adapted to disclose business cycle fluctuations, for the data are the expression of a complex of variations—not only cycles, but trends, seasonal variations, and accidental fluctuations of various kinds. All of these fluctuations are registered in the varying behavior of time series, and some procedure must be used to separate these several fluctuations if a measure of cyclical change alone is to be obtained.

Unless this separate measurement is made, not only is the study of cycles made more difficult, but serious confusion and deception will lie in wait for the unwary user of statistical data. If the trend of production, for example, is upward, every year tends to be a "record" performance. But breaking all records is no infallible index of prosperity, for unless the "record" is enough to include

the normal year-to-year growth, it is not a sign of prosperity; it may even be a sign of depression.

Seasonal variations make the same kind of trouble. If, for example, the output of pig iron in March is ordinarily 10 per cent above the average for the year, then the observer must beware of assuming that an actual increase of 10 per cent above the yearly average in a given March is a sign of prosperity. It is not a sign of prosperity, but only of the regularly recurring seasonal bulge. Only an increase of more than 10 per cent would indicate above-normal business in that month; and an increase of only 5 per cent would have to be interpreted as a sign of depression. At the end of depressions, when everyone is eagerly looking for signs of revival, the ordinary normal improvement of certain months may be mistaken for evidence of a genuine recovery, and people congratulate themselves on a March that was 8 per cent above the average for the year, when they should have been mourning because it was 2 per cent below the normal.

Although it is not feasible to segregate all the various fluctuations compounded in a time series, fortunately statistical technique has developed effective devices for calculating and removing trends and seasonal variations. The methods used in these calculations will be found set forth in any textbook on statistics. It is enough to indicate here in nontechnical language what the procedure means and the kind of corrections it makes.

The elimination of trend

To measure the trend is to find out what is the amount by which the data tend to increase from year to year or from month to month. It is fairly evident by glancing at a charted time series whether there is a trend, and whether it is upward or downward; and some idea of the amount of the trend can be obtained from a line drawn through the data, so that the area above and below the line is substantially equal. Table 7 and Chart 1 illustrate this.

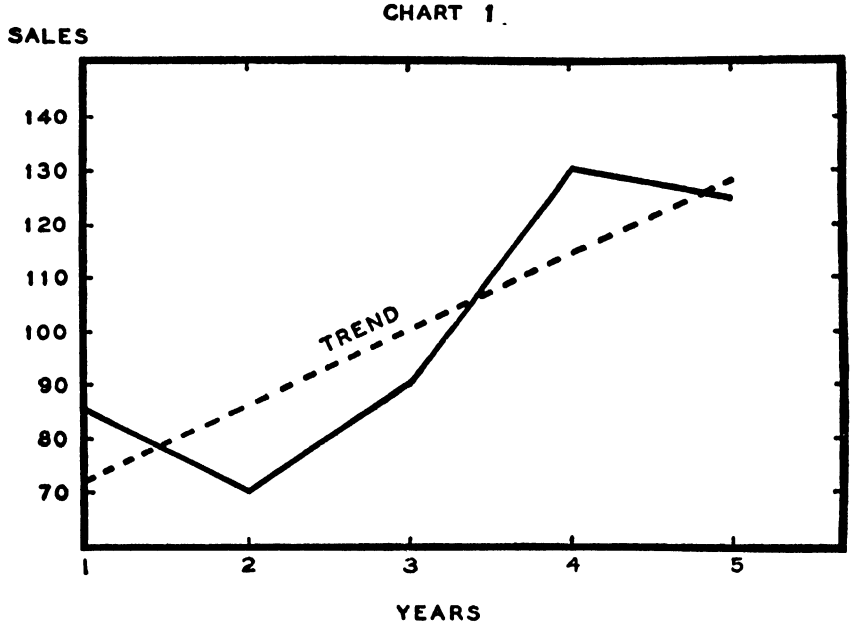
Let us put these figures on a chart, together with what seems to be the trend. It is evident from this chart that the trend is upward, despite the downward move in year 2 and again in year 5. The dotted line may be taken as fairly representative of this trend, showing at each successive year the amount that might be "expected" at that time.

TABLE 7

Year	*Sales in Thousands of Dollars*
1	85
2	70
3	90
4	130
5	125

The amounts indicated on the trend line may be called "the ordinates of the trend" and the increase from year to year the "increments of trend."

CHART 1.



If we may assume that the trend figure for year 1 is 72 (thousands), then, with an increase of 14 (thousand) each year, the ordinates of the trend are as given in Table 8.

TABLE 8

Year	*Ordinates of the Trend*
1	72
2	86
3	100
4	114
5	128

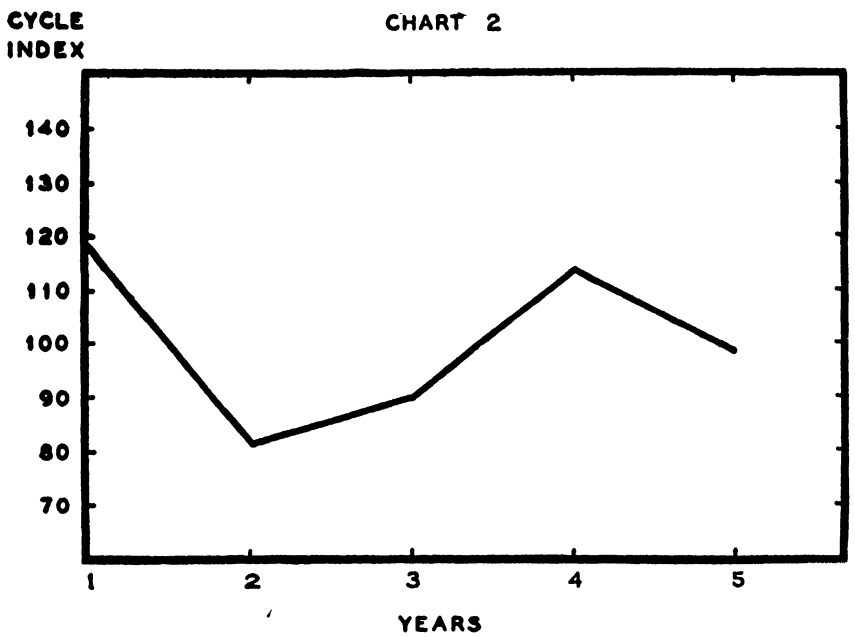
The degree to which the actual sales differ from the expected sales may be taken as the measure of cyclical fluctuation. Hence

cyclical fluctuation can be disclosed (and the trend "removed") by expressing the actual sales in each year as a percentage of the trend figure for that year, as is shown in Table 9.

TABLE 9

Year	*Original Data*	*Trend*	*Original Data as Percentages of Trend*
1	85	72	118
2	70	86	81
3	90	100	90
4	130	114	114
5	125	128	98

The figures in the last column may, therefore, be properly considered to be an index of cyclical fluctuations. Thus, in year 1, business was 18 per cent above "normal," but, in year 5, 2 per cent below "normal."



The result is as shown in Chart 2. The trend then is an expected amount of increase from period to period, and cyclical fluctuations are revealed as variations above or below this expected amount. In other words, they are variations from "normal" as expressed by the successive positions of the line of trend. Thus, in our illustration, the increment of trend is $14,000 a year—that

is, each year is expected to be $14,000 better than the year before—since this increase is "normal" for the period involved.

The time series has now been "corrected" for trend. There is no trend in this curve. It is merely a fluctuation around a level of 100 per cent, which itself represents that changing normal level which the trend is supposed to be.[4]

Some problems of interpretation

Trends thus discovered must be interpreted with care and a fair mixture of scepticism. The trend must be established for a definite given period, and this period must be chosen with discretion. The conditions at the two extremities of the curve must be reasonably alike. More particularly, the same phase of the cycle should occur at each end. If the period begins with prosperity or depression, it should end with prosperity or depression. Furthermore, there should be no fundamental disturbances in the conditions involved during the period. If the conditions are subject to abrupt change, the trend cannot be considered as established.

Even when these two conditions are fulfilled, the trend is accurate only for the period it covers. It cannot with any certainty be projected forward or backward. Trends are liable, as Mitchell puts it, to change without notice. They represent the period for which they are drawn, and no other period with surety. They cannot reliably be projected either forward or backward with any certainty of being correct.

Failure to recognize these limitations may lead to grave misinterpretations of current events and, in some cases, to dangerous mistakes in business judgment. Businesses that project into the future a trend of booming activity may find they have seriously overbuilt when the trend proves to be quite different. There is evidence that some automobile concerns fell into this trap in the 1920's. Again, if the long trend of general business up to 1930 is projected through the next eight years, the depression, as measured by the area below the "normal," stands out as imposingly great. But if the trend has suffered a change (and it is reasonable to as-

[4] Trend figures obtained by inspection, as illustrated above, are not likely to be satisfactory to statisticians who have devised mathematical techniques by which trend can be more scientifically established. These techniques are explained in every textbook on statistics. However the trend is established, the method of correcting for trend is the same as illustrated above.

sume that it has), so that the slope is not so steep, then the area of depression is smaller, and what seemed to be the greatest depression of all time turns out to be, at least in part, a matter of changing trend.

If statistical methods cannot be said to "establish" trends with precision, still less can they, by "eliminating" trends, "establish" business cycles. A trend may be removed statistically, but it cannot really be removed. Were the trend actually removed, the behavior of the business cycle would certainly be different from what it now is. Trends make cycles what they are; cycles make trends what they are. If the trends are to be considered the resultants of progress, they can be removed only if progress is removed. But progress being removed would change cycles too. At least some explanations of the cycle indicate that progress, invention, and change are important determinants of cycles as we know them. On the other hand, if cycles are a cause of progress, and some hold that it is the periodic expansion due to cycles that makes us go on the upward path, then trends are the result of cycles and cannot be eliminated in order to show cycles except by eliminating the cycle, or the very thing that is to be shown.

Therefore, although it may be convenient to regard cycles as variations from the line of trend, to be measured by the degree of this variation, one must recognize that the task of separating two such interdependent components as cycles and trends is really insuperable. It is one of those cases where $2 + 2 = 5$.

The elimination of seasonal variation

A seasonal variation is the tendency for an index in any month of the year to vary from the average for the year. Thus, in the building industry, construction for January, because of adverse weather conditions, will be only 70 per cent of the average monthly construction during the year. On the other hand, construction in April, when seasonal conditions are very favorable, will rise to 135 per cent of the monthly average.

It is possible, by appropriate statistical technique, to establish an index of seasonal variation. Such an index will show by how much the behavior of any given month may be expected to diverge from the average behavior of the whole year. Based as it is on past records, it cannot infallibly imply that a given month *will*

behave as expected, but only that, in general, the month in question *has* so behaved and may be expected to continue doing so.

Table 10 is an index of seasonal variation of pig iron production. This table expresses the typical or average seasonal behavior for each month as a percentage of the average behavior for the year. It assumes that the seasonal influence of any actual month is reasonably allowed for by the level of this index.

Seasonal indexes, like indexes of the trend, are bound to be empirical. They reflect what has occurred in the period in which the index has been calculated. They may or may not continue to reflect the facts. If the index is primarily due to the compulsions of the physical season, it may continue to be representative. But conscious effort to avoid the objectionable results of seasonal fluctuations may change the behavior of industry. If the seasonal fluctuation has been due to custom or habit, this fluctuation either may be broken down by planning or may break down of its own

TABLE 10

January	102	July	98
February	93	August	101
March	104	September	98
April	101	October	103
May	101	November	102
June	97	December	100

accord through the changing caprice of the consumer. There is no certainty, therefore, that a seasonal index based on past years will continue to be reliable. Automobile production has gradually become less seasonal, as closed cars and good roads have made year-round driving commonplace. In addition, on this has been imposed a conscious attempt to stabilize still more in the interest of good industrial relations, as when the Auto Show was pushed back into the late fall. Hence, the seasonal index for auto production in the 1930's was substantially different from what it was ten years before.

Furthermore, a seasonal index, no matter how carefully calculated and adjusted to satisfy changing seasonal conditions, either physical or conventional, measures the typical, not the specific, monthly variation. The specific or actual variation may differ from the typical or average variation, and, when this happens, the cyclical measure is bound to be distorted. If the specific vari-

ation is less than average, the cycle index will understate the cyclical level. If the specific variation is more than the average, the cycle index will overstate the cyclical level. Thus one expects a certain bulge in jewelry business in June because of college and high school graduation. If the bulge is greater than expected, it is attributed to the cycle and is supposed to indicate a general rise in business. But it may merely mean a larger than average set of graduates or a more generous than average set of friends.

Adjusting for seasonal variation

A time series can be adjusted for seasonal variation by dividing the output (or value) for each month by the corresponding seasonal index. This process is shown in Table 11.

TABLE 11

Month	*Output (Thousands of Tons)*	*Seasonal Index (%)*	*Adjusted Output*
January	85	102	$\frac{85 \times 100}{102} = 83.3$
February	70	93	$\frac{70 \times 100}{93} = 75.3$
March	90	104	$\frac{90 \times 100}{104} = 86.5$
April	130	101	$\frac{130 \times 100}{101} = 128.7$

The seasonal index for January being 102 per cent of normal, the unadjusted figure overstates the normal output. The adjusted figure, which is found by dividing 85 by 102 per cent (= 83.3), shows the output which would be expected were seasonal variation absent. Similarly, as February output is expected to be 93 per cent of normal, the unadjusted figure understates the normal output, which is shown by the adjusted figure of 75.3.

The adjusted figures of output are, therefore:

	Thousands of Tons
January	83.3
February	75.3
March	86.5
April	128.7

Adjusting for both trend and seasonal variation

When both seasonal variation and trend have to be removed, the process is similar. What is sought is a figure that will express the actual data as percentages of the "expected." In this case, the "expected" is the trend modified by the seasonal variation.

Table 12 shows the actual performance over a period of months, as compared with what might be called the "expected," or normal, performance during the same period.

TABLE 12

Month	I *Actual Sales (Thousands of Dollars)*	II *Seasonal Index (%)*	III *Ordinates of Trend (Thousands of Dollars)*	IV *Expected, or Normal, Performance*
January	85	102	72	$72 \times 102/100 = 73.4$
February	70	93	86	$86 \times 93/100 = 80$
March	90	104	100	$100 \times 104/100 = 104$
April	130	101	114	$114 \times 101/100 = 115$

In Table 12, Column III is a supposed trend, beginning with 72 (thousand) in January and increasing by 14 (thousand) each month. Column IV is clearly an index of "expected" sales. Thus in January the trend indicates sales of $72,000. But as January is a better-than-average month, as indicated by seasonal index of 102, the full expectation for January is 102 per cent of the trend (102% of 72 = 73.4). Similar calculations give the expectation for other months.

The final correction must, therefore, be to express the actual performance as a percentage of the expected. When this is done, one has a picture of deviations away from normal, which may be taken to be a picture of whatever fluctuations are left after trend and seasonal variations have been "removed." Table 13 shows this completed process.

TABLE 13

Month	*Actual Sales*	*Expected Sales*	*Corrected Index = Actual as Percentage of Expected*
January	85	73.4	116
February	70	80	87.5
March	90	104	86.5
April	130	115	112

To sum up: if the ordinates of the trend are calculated and a seasonal index discovered, then the process of correcting a time series for trend and seasonal fluctuation is represented by the following equation:

$$\text{Corrected index for each date} = \frac{\text{Actual datum}}{\text{Trend} \times \text{seasonal index}} \times 100.$$

That is to say, the actual performance is reduced to a percentage of expected or normal performance, and the result is a picture of cyclical fluctuations undistorted by the effects of either trend or seasonal variation.

Random fluctuations not eliminated

While the elimination of trends and seasonal fluctuation is necessary for the statistical measurement of the business cycle, it must not be assumed that the statistical residue after these eliminations represents the business cycle and nothing else. It does not. It represents the business cycle modified by the effect of accidental, random, or irregular fluctuations.

These random fluctuations cannot be segregated in the present state of statistical knowledge. They do not occur in recognizable periods like the seasons and they are not subject to the persistent continuing movement of trends. It is possible that their distribution may be subject to the law of probability, that their number is so considerable, their nature so varied, and their effects so differing that they might be thought of as canceling each other out. But the evidence that this is true is lacking, and, in respect to major factors such as wars or great inventions, canceling out is, *prima facie,* improbable. We will presumably have to accept the difficulty as insurmountable for the present and to be satisfied with having eliminated the effects of trends and seasons.

It is the interposition of these irregular and accidental causes which helps to make cycles as we know them differ from each other in shape. And it is these uncertain factors which make the art of forecasting so difficult. Cycles seem to be the combined result of various generating causes and certain typical business responses. Both the generating causes and the responses, but particularly the generating causes, are affected by these unpredictable, accidental influences that we call random fluctuations. Some day the pattern

of wars, strikes, droughts, epidemics, and inventions may be better known. When it is sufficiently well known, "accidental" fluctuations will no longer exist, and business forecasting will be a science rather than the intelligent guesswork it perforce now is.

3

THE RECORDS OF BUSINESS CYCLES

When cycles began

IT HAS BEEN pointed out that, although business cycles are not subject to a fixed rhythm they are capable of being measured. Such measurement must be obtained from the records of cyclical fluctuations wherever they may be found, reaching back as far as possible and into all countries of the world.

The records of business fluctuations, at least in the recognizable pattern of recurrent ebb and flow of activity, do not in all probability extend back of the Napoleonic Wars. It is true that all economic life in the past, as far as records go, has been subject to many vicissitudes and changes, but the kind of fluctuation to which the term *business cycle* applies seems essentially to be a characteristic of relatively recent industrial history, more particularly of that modern industrialism which has developed since about the time of the Napoleonic Wars.

The economic records of the past show good times and bad times. To use the terminology of the past, they show many crises. But these variations of economic activity do not take on the recurring rhythm of cycles. They do not arise from characteristics inherent in, and forces developed by, the world of business.

In his minute study of English business from 1558 to 1720, Dr. William R. Scott of St. Andrews has discovered 30 crises during this period of time. Characteristically, they are due, principally, to the following causes: famines, plagues, wars, civil disorders, irregularities of government finance, high-handed acts of government, early speculation (such as the South Sea Bubble of 1720). Most of these alleged "causes" play little part in modern cycles.

The older crises, moreover, were likely to be of long duration. One-fifth of them lasted three years or more. Modern crises tend to be short. Whole cycles are ended in three or four years. In earlier times, crises did not necessarily follow periods of prosperity; 12 of the 30 came in periods of depression. Modern crises with few exceptions such as 1932–1933 tend to follow periods of prosperity, for the reason that prosperity induces stresses and strains that bring it to an end. Again, whereas modern crises are usually brought about by factors inherent in the nature of our business process, the older crises were seemingly precipitated by nonbusiness factors and could, therefore, occur at any time. They tended to be isolated, unpredicted disturbances and produced an irregularity of sequence such as is not characteristic of the fluctuations of modern business activity. Essentially they were "occurrences of the unforeseen."

One may conclude that business cycles are a phenomenon of a highly developed business civilization, and that the earlier English crises "were not business crises of the modern type and that the intervals between these crises were not occupied by business cycles." [1]

Some time in the late eighteenth century, in all probability, crises brought on by nonbusiness factors begin to give way to crises that are part of a regularly recurring cycle, and are brought about by the various circumstances in the cycle itself. Just when this occurred is a matter of doubt and speculation. For example, Tugan-Baranowski (*Les Crises Industrielles en Angleterre*) holds that what we would call "business cycles" began with the English crises of 1825. He regards the crises that marked the close of the Napoleonic Wars, 1811, 1815, and 1818, as nonperiodical, attributable to the war, and properly to be grouped with the "nonbusiness" crises of the eighteenth century. On the other hand, Bouniatian (*Geschichte der Handelskrisen in England 1640–1840*) calls the crisis of 1793 the first of England's great industrial crises followed by a general business depression. One might argue that the sensational panics following the collapse of John Law's Mississippi Company in France and the South Sea Bubble in England

[1] W. C. Mitchell, *Business Cycles, The Problem and Its Setting* (New York: National Bureau of Economic Research, 1927), p. 80, and section one of Chapter II. Mitchell's usage would substitute "recessions" for "crises." (See Chapter 4 of this present volume.)

(1720) were to some extent forerunners of the modern crisis, possibly marking in some way the transition from the old nonbusiness crisis to the modern business cycle. While these speculative excesses did not arise out of the production and distribution of commodities and had no inherent connection with the general business system, they did on the other hand spread beyond the circle of speculation and had notable effects on business activity, raising commodity prices and stimulating industrial production and building activity.

Cycles arrive with modern industrialism

Probably the arrival of business cycles cannot be precisely dated, but it is certain that their first definite and undeniable appearance occurs in England at the beginning of that modern period ushered in by the end of the Napoleonic Wars. This occurrence is highly significant, for it was England which, by that time, was beginning to display the essential characteristics of modern industrialism and what Mitchell calls "a fully developed business economy." It is in this business economy where "a large proportion of the people begin to rely on making and spending money in a large proportion of their activities" that recurrent alternations of prosperity and depression slowly begin to appear.

In a society where the economic life is centered in the family; where production is for the family, not for the market; and where the guide to activity is immediate need, not prices or the stimulus of profit, business economy is lacking. It is a subsistence economy, and subsistence economies do not appear to generate cycles. In such an economy, there is no reason that would encourage people, nor any force that would compel them, to vary their activities from year to year; no reason why economic activity should be very active for a few years and then very dull for a few years. In such a society there would be variations of output, but they would not arise from the business activity of the people. They would be the result of agricultural vicissitudes—would arise from good or bad crops and other vagaries of nature.

Simple agricultural communities, living off the soil, with little surplus, would be of this sort. In all countries, the agricultural community, so far as it is engaged in simple farming, is not directly

exposed to business cycles. More exactly, the activities of agricultural communities do not fall into the pattern of the business cycle, although of course they may be, and in fact are, affected by the variations in activity in "business" as such.

But when a large part of the population makes a living by making money, producing goods for wide markets, using credit and a widespread credit and banking system and organizing their enterprises on a relatively large scale with many employees, then business cycles seem to become a necessary part of their economy.

In this sense, business cycles are a function of what has come to be called "modern capitalism." It is characteristic that cycles appeared first in the countries having the most highly developed capitalistic system; and, conversely, that the least capitalistic countries today are affected to the least extent by such cycles; and that, even in the countries where business cycles make their most noted appearance (as, for example, the United States), the occupations and industries least affected by the characteristic processes of modern capitalism seem at the same time to be least exposed to the fluctuations of the business cycle—such occupations, for example, as agriculture, retail trade, personal service, and the handicrafts.

Thus it was that England experienced business cycles before the United States. In the United States, the early periods of prosperity and depression were derived largely from agrarian conditions, and there is evidence that cycles, as we know them, had to await the great and characteristic growth of industrialism that followed the Civil War. Carl Snyder holds that

> . . . it was not until the development of steam power, the wide use of coal and iron, and the extraordinary burst of mechanical invention which followed, that modern industry, and therefore modern trade, could arise. It was from these that the business "cycle" was born.

Up to the 1840's, the United States had only "rudimentary experience" with business cycles. The panic of 1837 was essentially a financial and banking episode. Railway construction, canal traffic, tonnage of merchant marine, and coal and iron production were affected little. Prior to the 1840's, such waves of prosperity and depression as appeared were largely years of plenty or dearth in the yield of farms. Even the panic of 1857 was largely a financial and banking convulsion rather than the beginning of a serious

industrial depression. The advent of the unmistakable business cycle, in the modern sense, appears to Snyder to date about the late 1860's.[2]

Germany's cycles emerged with the unification of the Reich and the industrialization of its economic structure following the Franco-Prussian War. It is illuminating that France, which has remained to such a large degree the home of small-scale business and industry, as well as the least capitalistic types of agriculture, has been in the past less affected by business cycles than her contemporaries, the United States, Great Britain, and Germany. In the countries which are least developed in this type of capitalistic, money-making, business economy—China, India, Brazil, South Africa, Russia (at least before the Revolution)—the fluctuations are produced, as of old in England, more by "nonbusiness" than by business causes. Droughts, floods, epidemics, and civil disorder are more likely to be the disturbing causes. When fluctuations of the more modern type occur in these countries, they are found in those areas which have been most exposed to the money-making organization—as, for example, the coast cities of China.

The records of business cycles

From this survey we may conclude that the data for the study of business cycles must be obtained from the records of business in modern industrialized countries since the early nineteenth century. It will be convenient to classify these records, following Mitchell's usage,[3] into two general divisions which, however, must not be taken to be mutually exclusive. These two divisions are *business annals* and *business statistics.* Business annals are qualitative records exhibiting the state of business as recorded by businessmen, financial reporters, and other trained observers. They state that business was good or bad, active or sluggish, rising or falling, and so forth. Business statistics, on the other hand, are quantitative records showing the state of business in the behavior of certain statistical indexes, which purport to register the behavior of business in general. They state that business has risen

[2] Carl Snyder, *Business Cycles and Business Measurements* (New York: The Macmillan Company, 1927), Chapter 1.

[3] Mitchell, *Business Cycles,* Chapters III and IV.

10 per cent, or fallen 15 per cent; or that business is 5 per cent above normal or 20 per cent below; and so on.

But this is only a definition of our two measures. To penetrate their significance, they must be examined in some detail.

Business annals

To repeat, business annals are the pictures of business conditions taken by the business reporter. They are to be found in financial papers like the *Economist* of London, in annual reviews, from consular reports, and from similar sources. As classified by Thorp in his important study,[4] they give contemporary opinion on: (1) industrial, commercial, and labor conditions as reflected in output, trade, and employment; (2) loan, security, and foreign exchange markets as shown in interest rates, stock prices, and exchange rates; (3) agricultural output and prices; and (4) non-economic conditions such as politics, wars, floods, and so on.

To some extent, as can be seen from the above list, this evidence is statistical and objective. Perhaps to a greater extent, especially in the early years, the evidence is nonstatistical, subjective, and personal. Even where the data happen to be statistical, they come down to us as seen by the eyes of the financial editor, and the statistics themselves appear in crude form not corrected for the disturbances caused by seasonal fluctuation or secular trends. Hence annals cannot be relied on to give a completely objective picture. There is conflict and confusion of interpretation as observers take different standpoints. There is also the distortion caused by the personal equation, so that, for example, after a depression any rise may seem to be prosperity, or after prosperity any fall a depression.

This handicap is inevitable and is particularly notable in those more remote years when, because of the absence of reliable statistics, the annals are our only source of cyclical information. But it can be said that, as years go by, the reliability of the annals is greater. Sources of information are more numerous and more reliable. One can check one source against another. The various parts of the economic world tend to lose their sectionalism, and violent differences of opinion tend gradually to be eliminated.

[4] W. L. Thorp, *Business Annals* (New York: National Bureau of Economic Research, 1926).

Business reporting becomes a profession, with special periodicals and more and more competent aid from public agencies, especially consular reports. These developments remove some of the limitations of the annals, and help to make them almost as reliable and perhaps more usable than the more "scientific" statistics.

Of course, the principal advantage of the annals is that they cover periods reaching back before adequate statistics are available. In no country in Europe can cycles be traced back to the beginning (Napoleonic Wars) through statistics alone. For the same reason, the spread of cycles to the newer countries cannot be traced by statistics. In England and the United States, the annals cover at least twice as many cycles as are covered by any save the scantiest statistical data. In England and the United States, annals are available from 1790; in France, from 1840; in Germany, from 1853; in Austria, from 1867; and in Italy, the Netherlands, Sweden, Russia, Canada, Australia, South Africa, Argentina, Brazil, British India, Japan, and China, from 1890.

What the annals reveal

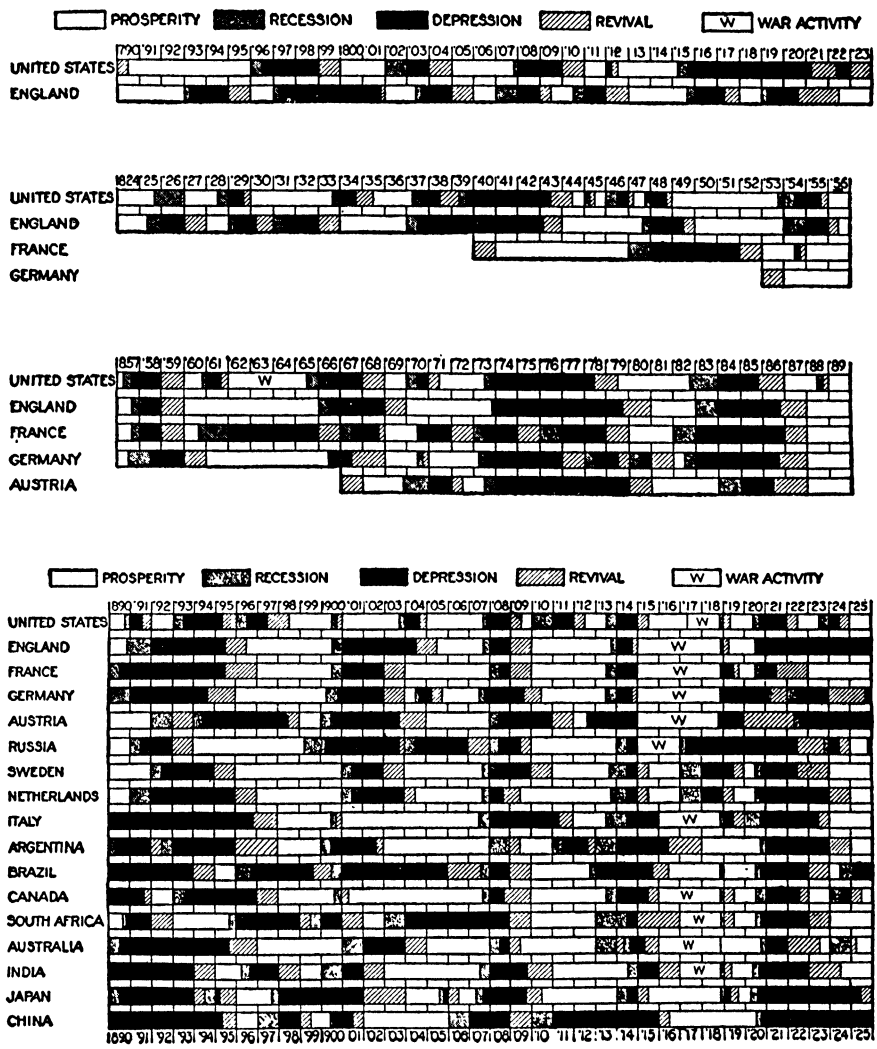
Business annals cannot give quantitative evidence or make quantitative statements in respect to the behavior of business cycles, but they do establish beyond question a generalized pattern of fluctuation. Even the simplest inspection of business history shows those notable setbacks to industrial advance that are known as crises. These setbacks stand out as dramatically as wars, elections, coronations, or any of the events to which history is commonly devoted.

The annals collected by Thorp and his associates reveal, as one would expect, these familiar timing points, but they reveal also a great deal more. Out of the vast amount of detail which this study of commercial histories and consular documents brings to light emerges a continuously repeating pattern in the long history of industrial and business change. Again and again activity leads to relapse; again and again depression leads to a revival, and a renewal of active trade. What is found is a frequently recurring sequence in which the familiar crises that have found their way into history are only one of the more dramatic aspects.

This picture of continuous oscillation is not always clear-cut. Not all business is dull or active at the same time, and sometimes

conditions are so mixed that no analysis can reveal what is going on. But these cases are not common; ordinarily there emerges a "prevailing tone," and it is this prevailing tone, or average, which marks the current phase of business at any given time.

The recurring phases through which business activity seems to pass, as visioned in the annals, are, broadly, two: advance and decline, or prosperity and depression. But the transition from pros-



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CONSPECTUS OF BUSINESS CYCLES IN VARIOUS COUNTRIES, 1790–1925

Taken from Willard Thorp and W. C. Mitchell, *Business Annals* (National Bureau of Economic Research, 1926), pp. 94–95.

perity to depression is ordinarily so well marked, sometimes, as noted above, by definite crisis conditions, that it is useful to regard it as a separate phase. When this is done, the corresponding period of transition from depression to renewed prosperity seems equally deserving of recognition. If this recognition is granted, then the most convenient summary of the recurring cycle exhibited in the annals is prosperity, recession, depression, and revival. These phases, with occasional qualifying adjectives, such as mild depression, boom (high prosperity), panic (severe recession), and so on, exhibiting the continually changing degree of intensity found at various times, are the captions chosen by Thorp to summarize his findings of the state of business.[5]

Business statistics

It seems to be true that, although statistical data exist in what appear to be enormous quantities, they are still grossly inadequate for the study of business cycles, particularly over long periods of time. Arising as they do, largely as a by-product of some governmental or business activity, these data are not likely to be the precise kind the investigator would take if he had the choice. They are rarely available for the particular processes or periods wanted. If they are available for one period, they will be missing at another, so that comparative study of numerous cycles is made difficult. The farther back the study is carried, the more glaring the gaps, so much so that most of our knowledge of cycles before 1870 must come from an intelligent use of business annals. Statisticians are beggars who cannot be choosers. They take what they can get, not what they want.

Since 1870 in the United States and probably 1855 in Great Britain, statistical indexes are, however, so much more complete that they offer a reasonably valid method of examining the fluctuations of general business. But it must be realized that no statistical indexes of any sort can give a direct picture of the "congeries of many fluctuations" to which is given the name *business cycles.* All that any time series can do is to reveal the cyclical movement of a particular process. True, a statistician can put together various indexes into an "index of general business," and in so doing

[5] Table 32, "A Conspectus of Business Fluctuations in Various Countries," in Mitchell's *Business Cycles,* pp. 425–437, exhibits the phases in detail for all available countries from 1790 to 1925.

he may assume that he is presenting a picture of business cycles; but, as a matter of fact, this is not the case. There is no way of picturing the business cycle directly, except perhaps by setting out faithfully on a single chart all the available indexes representing specific activities of business. Unfortunately, a faithful picture of this sort is little more than a hodgepodge of varying curves, proving, if it proves anything, that faithful pictures are of doubtful value.[6]

These difficulties however, do not prevent the statistician from proceeding with the work of analyzing business cycles. He takes the data he can get, refines them into usable shapes, and avoids the confusing complications of the statistical picture by selective devices designed to give a fair representation of the "general drift" of many fluctuations. These methods may be classified into three general divisions: (1) Some simple index may be picked out which may be regarded as representative of all fluctuations. (2) A composite index may be constructed representing a wide section of production as such. (3) A more elaborate composite index may be constructed covering not only production but trade, distribution to consumer, financial transactions, and any other important aspect of economic activity as a whole.[7]

1. Simple representative indexes

There are some processes so central to the economic system that they are affected by any broad changes in general activity. For this reason, they serve as useful gauges of the extent of this activity, and the record of their variations might be regarded as a reasonably satisfactory picture of the changes in activity as a whole. Such indexes are: (a) the output of pig iron or steel ingots, (b) bank clearings or bank debits, (c) railroad transportation, and (d) electric power production.

The activities represented by these indexes are all central in the economic system; the indexes are simple and easy to comprehend; and, with the exception of the index of power production, they are available, or can be made available, for long periods of years.

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[6] For example, see the charts in Mitchell's *Business Cycles*, pp. 310–311, where twelve or fifteen components, respectively, of two of Snyder's indexes are plotted on single charts.

[7] For a discussion of these various indexes, see Chapters XV and XVI in E. C. Bratt, *Business Cycles and Forecasting*, 3rd Ed., 1948.

(*a*) *Iron and steel.* Iron and steel are so fundamental to all types of output that the variations in the production thereof have always been regarded as an important measure of business activity and for many years, when available statistics were none too numerous, served as a handy clue to the fluctuations of business. Iron production has been recorded since 1903 and estimated since 1884; production of steel ingots has been recorded from 1917; and the unfilled orders of the United States Steel Corporation are available since 1901. It is a merit of these indexes that they reflect particularly the changing demand for buildings, railway construction and equipment, industrial machinery, and similar heavy capital, the variations of which are so characteristic of business cycles. In so doing, they doubtless tend to give an exaggerated picture of the fluctuations of industry in general, but experience shows that they indicate at least the timing and direction of general fluctuations as accurately as any equally available index. For the period 1899 to 1919, for example, the correlation between the pig iron index and an index of manufactures was +0.97, indicating extremely close correspondence.[8]

(*b*) *Bank clearings or bank debits.* Bank clearings or bank debits serve to reflect business as a whole as it passes through the central machinery of bank payments and should reflect with reasonable accuracy the direction and amplitude of general change. Probably 90 per cent of payments are made by bank check. Bank clearings have a long history as a statistical measure, but, of late years, bank debits have been looked on with more favor. Bank debits, or debits to individual accounts, are, in respect to reporting banks, an evidence of *all* checks debited against accounts, and not merely, as in case of bank clearings, that (changing) part of checks which happens to have gone through a clearinghouse.

To be the best index, bank debits must, of course, be deflated (that is, corrected for price changes) if they are to reflect increase and decrease of activity. As the total bank debits are unduly influenced by financial transactions arising out of the money market and the stock exchanges, and hence tend to show variations out of proportion to changes in business activity, it is best to use an index that excludes New York City—that is, "bank debits ex

[8] Hardy and Cox, *Forecasting Business Conditions* (New York: The Macmillan Co., 1927), p. 163.

New York." With these corrections, bank debits may be made a reasonably satisfactory single index of variations of business activity.[9]

(*c*) *Railway transportation.* The volume of business done by railroads has always been regarded as a most useful guide to general activity, both because of the extent of the available data and because of the tendency of the statistics of freight movements to reflect the expansion and contraction of almost every kind of business. Furthermore, unlike bank data, they are not affected by purely financial variations not directly evidencing business activity. Although other indexes are available, such as idle cars or revenue tonnage expressed in ton-miles, the most commonly used index of transportation activity is carloadings. Available transportation indexes are, at best, a defective clue to general activity. They overemphasize heavy as compared with light traffic. Particularly, they suffer from the limitation that railroad transportation is a changing and declining proportion of total transportation. The carriage of commodities by trucks and airplanes and the transmission of power by electricity have given railroad transportation a downward trend, the degree of which is difficult to estimate. There is evidence, too, that the percentage of transport carried on by railroads changes during the phases of the business cycle, rising in prosperity, falling in depression. For these reasons, railroad transportation indexes are likely to be less satisfactory indexes of general business activity as time goes on.

(*d*) *Electric power production.* Like iron and steel, electric power is coming to be an ubiquitous commodity used by industry in general. Were its use sufficiently common and widespread, it would seem to give a very accurate indication of the changes in volume of industrial output. It suffers, however, from being a somewhat unrepresentative sample. Clearly, as it stands, it would overemphasize the mechanized industries. And, although its scope is continually increasing, the trend of this increase is uncertain and subject to sudden and spasmodic upward changes. For the period for which this index is available (monthly since

[9] Carl Snyder (*Business Cycles and Business Measurements,* Chapter VI) found that a clearings index ex New York, multiplied by a factor to raise it to the level of a general bank debits index and corrected for prices, corresponded so reasonably well with a volume-of-trade index that he regarded it as an adequate indicator of business cycles in the period 1875–1922.

1919), it is, however, a fairly useful general index. Carl Snyder considers that it is a good barometer, "showing a very smooth cyclical movement synchronizing well with the volume of trade, except for a lag through 1919 and part of 1920." [10]

2. Composite indexes of business activity

The indexes examined above are all relatively simple indexes assumed, because of their strategic position, to give a fair picture of the fluctuations of business in general. They are the sensitive gauges that, it is hoped, might conveniently register business change. But as gauges of this sort are clearly imperfect, the question arises whether general business activity itself might not be measured, and its changes or, more exactly, the average of the changes of its various parts be ascertained directly rather than through the movement of some more or less sensitive gauge.

(*a*) *Indexes of national income.* The most comprehensive measures of general business activity are the indexes of national income and output that recent developments of income statistics and analysis have made available. These indexes make use of four basic concepts, *viz.* the gross national product or expenditure, the net national product or expenditures, the national income, and personal income.[11]

The gross national product or expenditure is the money value at market prices of all finished consumers' goods and services together with the value of all new capital goods, such as houses, business plants, and equipment produced during a given period. It is the market value of total current output before deduction of allowances for capital consumption.

The net national product or expenditure is equal to the gross national product after deduction of allowances for capital consumption. It is the net output of goods and services produced by the nation's economy.

The national income is the aggregate compensation of the factors of production from the current output of goods and services. It measures the total factor costs of the goods and services produced. Essentially it differs from the net national product by

[10] Snyder, *Business Cycles and Business Measurements*, p. 169.

[11] See National Income Supplement to Survey of Current Business, July 1947, for the most recent revisions of these indexes, together with a full discussion of terms. U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C.

excluding indirect business taxes. The national income is the oldest and best known of these three measures.

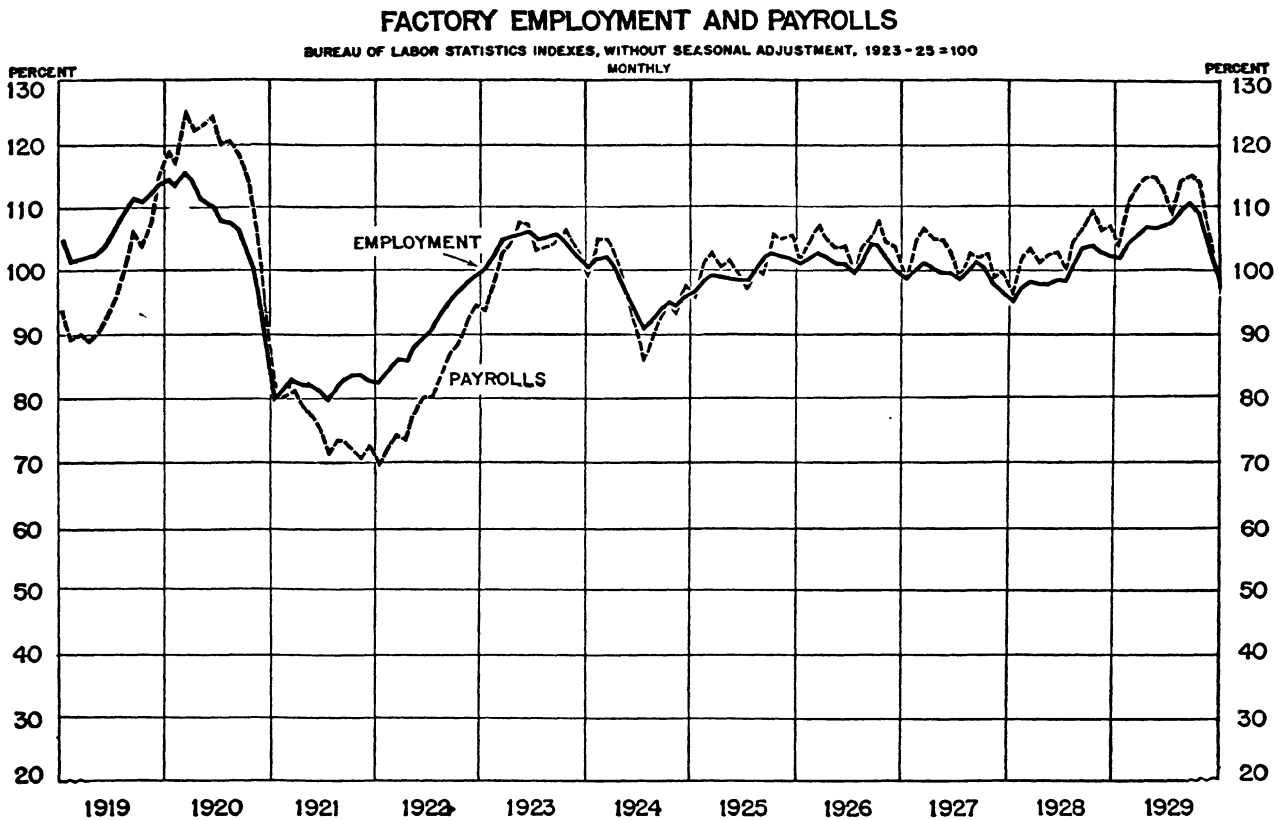
Personal income is the aggregate current income received by individuals from all sources. It differs from the national income by being exclusive of undistributed corporate profits and corporate income and excess profits taxes, and social security contributions, and inclusive of government transfer payments for which no current services are rendered, such as social security benefits, veterans' bonuses, and the like.

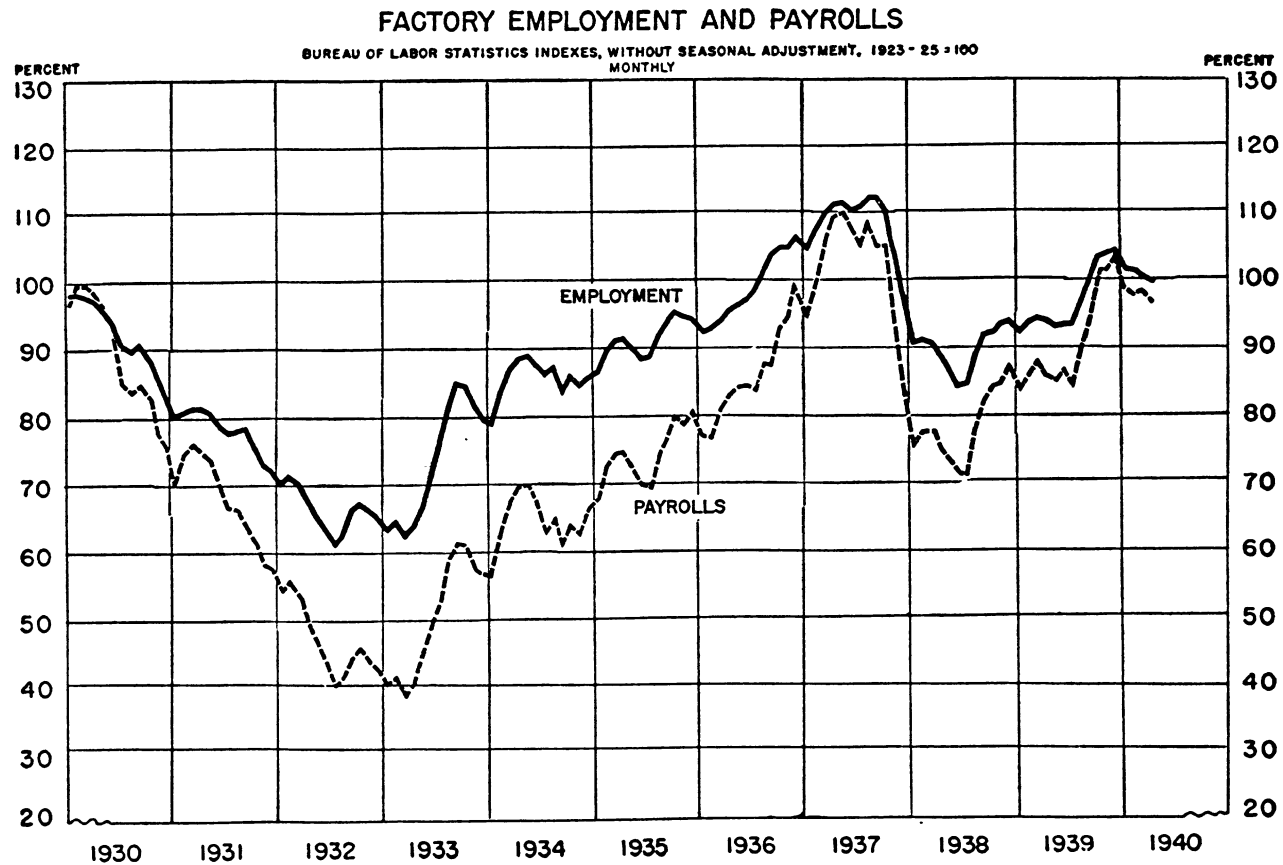
These comprehensive indexes are made more useful by being broken down into their component parts. The gross national product or expenditure is divided into three main categories: consumption expenditures (for durable goods, nondurable goods, and services); government purchase of goods and services; and gross private capital expenditures (including construction, durable equipment, net changes in inventories, and net foreign investment). The national income is classified by distributive shares (compensation of employees, profits, interest, and rents), by industrial origin according to principal industrial segments of the economy, and by legal form of organization, as corporations, unincorporated businesses, and so on. Personal income is classified into labor income, proprietors' and rental income, dividends and personal interest income, and transfer payments. It is also broken down by disposition; so that personal income less personal taxes and nontax payments equals *disposable income,* which in turn is divided into personal consumption expenditures and personal net savings.

Three of these indexes are reported currently in the Survey of Current Business. The gross national product and the national income are reported quarterly; personal income, monthly. The fourth, net national product, is not currently published, and is only of theoretical interest. The reported indexes are in money values, and to be significant as measures of activity must be corrected by the appropriate index of prices. When so corrected they give the most generalized available picture of the current state of economic activity and of its ebb and flow through time.[12]

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[12] Useful quarterly estimates of national income, going back to 1921, are available in Harold Barger, *Outlay and Income in the United States 1921–1938* (New York: National Bureau of Economic Research, 1942).


FACTORY EMPLOYMENT AND PAYROLLS
BUREAU OF LABOR STATISTICS INDEXES, WITHOUT SEASONAL ADJUSTMENT, 1923-25=100
MONTHLY
PERCENT
PERCENT
130
120
110
100
90
80
70
60
50
40
30
20
EMPLOYMENT
PAYROLLS
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929


FACTORY EMPLOYMENT AND PAYROLLS
BUREAU OF LABOR STATISTICS INDEXES, WITHOUT SEASONAL ADJUSTMENT, 1923 - 25 = 100
MONTHLY
PERCENT
PERCENT
130
120
110
100
90
80
70
60
50
40
30
20
EMPLOYMENT
PAYROLLS
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940

(*b*) *Indexes of employment and industrial production.* Indexes of activity based on more limited fields are available in the major branches of production and mining. These come in two alternative forms: indexes of employment and indexes of production, both of which might be regarded as measuring the variations of business activity in the fields covered.

Indexes of employment. An index of employment and an index of production should, on the face of it, tend to coincide in both direction and amplitude of change; and they would so coincide but for variations in the average output per worker. Because of these variations an index of employment is not quite the same as an index of production.

An index of employment measures the changes in the total number of persons employed in a given field. When the number increases, the index rises; when the number decreases, the index falls. In other words, numbers are measured, not activity. But the activity or output may go through considerable variations unrelated to changes in numbers. These may arise either from changes in number of hours worked or from changes in efficiency per worker. Thus an increase of output in prosperity may arise from an increase in average working time as well as from an increase in the number employed; and a decrease of output in depression may arise from a decrease in average working time as well as from a decrease in the number employed. Hence, output rises and falls more than employment. Contrariwise, the average productivity of workers tends, apparently, to fall in prosperity and rise in depression, so that, from this standpoint, output increases and decreases less than the volume of employment. As the changes in working time and productivity, respectively, as they happen in prosperity and depression, have opposite effects on the scale of output, it is conceivable that an index of employment is a better index of output than it would seem on the surface. However, there is no certainty that these canceling effects do happen, and it may be assumed, therefore, that an index of employment is not necessarily a good index of output, at least in respect to degree of change. It is true, nevertheless, that the direction and the timing of change in the output of industry are reasonably well shown by an index of employment.

A more accurate picture of activity might be obtained from an

index of payrolls, representing the total amount of money payments made to wage earners. This would tend to rise and fall with output, whether or not more or less workers were employed. But it has its own distortion arising from its being expressed in value terms. As its increase and decrease in expansion and contraction is partly due to changes in wage rates arising from inflation and deflation, it would have to be corrected for price changes to be an effective means of activity.

The different picture given by indexes of employment and payrolls in the inter-war years is shown in the chart on pp. 54–55.

In practice, indexes of employment may suffer because of a further defect arising from the limits of the area covered. Thus the best-known index of this kind in the United States is the *Bureau of Labor Statistics Index of Factory Employment.* This index is based on data derived from establishments in some 90 industries and covers probably 50 per cent of factory wage earners. Yet even this index suffers from two defects. In the first place, it covers only factory employment and hence can be representative of industry as a whole only provided factory employment can be regarded as a fair sample of general industry. But factory employment cannot be regarded as a representative sample. There is no reason to suppose that occupations outside of factory employment have the same employment changes. Some of these, such as trade, particularly retail trade, probably have less intense fluctuations. Others, such as the rapidly growing and dynamic service industries, may have more intense fluctuations.

In the second place, even in respect to factory employment, the index may be a faulty fraction because of the difficulty of adjusting it to continual changes going on in the field of manufacture. Old concerns are disappearing; new concerns appearing. In practice, it is difficult to bring the list of reporting establishments sufficiently up to date to enable it to be continuously a fair sample of industry. Thus the index tends to be weighted in favor of the existing list, and so may understate not only the long-time volume of employment but also the degree of fluctuation of employment, for the newer industries may possibly, because of their newness, be both the most rapidly expanding and the most fluctuating.

(*c*) *Indexes of production.* Probably the best index of chang-

ing economic activity would be an all-inclusive index of production containing the production of both goods and services. Such indexes as are available, however, are more likely to measure production of goods than of services and, in respect to the production of goods, standardized rather than nonstandardized commodities and durable rather than nondurable goods. A good example of indexes of this limited sort is the *Federal Reserve Board Index of Industrial Production,* available since 1919, which is based on a wide sample from representative industries in both manufacturing and mining and may be regarded as a reasonably effective indicator of the position of business as a whole.

This index includes 81 individual series distributed among sixteen groups of manufacturing industries, two groups of mining industries. It covers one-fourth of all employees in manufacturing and mining, and many more indirectly. It does not include agriculture, primarily because the production process of agriculture is, to a large extent, an annual one and can hardly be measured on a monthly basis. Nor does it include construction activity, partly because its production process covers a long period of time, partly because current statistics of building activity are generally expressed in value terms and satisfactory physical volume data are not available.

Monthly figures on production are obtained from a number of sources. Where output data are not available, consumption figures may be used instead. For products that are too diversified to be measured in standardized physical units, such as machinery or furniture, or chemicals, productive activity is measured by statistics of employment and man hours worked, adjusted for estimated changes in output per man hour.

The several component parts of the series are weighted according to value added in the base period 1935–1939. No attempt is made to remove trends, but the biennial census of manufactures is used to check the correctness of the data over time. Two series are published, the one adjusted, the other unadjusted for seasonal fluctuation; and all monthly data are reduced to average daily output.

From time to time the series must be revised, both in order to change the weights and to include new or previously unrepresented industries. Such revisions were made in 1940 and in

1943,[18] with substantial changes in the level of the index. Thus in mid-1943 the new index stood 36 points or 18 per cent higher than the old one.

The Index of Industrial Production is based on a wide sample of representative industries in both manufacturing and mining and may be regarded as a reasonably effective indicator of the position of business as a whole. But it has its defects. It measures the production of goods but not services; it emphasizes the production of standardized as compared with nonstandardized goods, and the production of durable rather than nondurable goods. And because the goods that it does measure have larger-than-average fluctuations, the index will fluctuate more violently than does total production, and *a fortiori,* than total economic activity. Hence, although it may be very sensitive to business change and may accurately reflect the timing of such change, the index will give an impression of industrial instability that is exaggerated and must be corrected by judicious interpretation.

Historically, indexes of production (and, even more, indexes of employment) suffer from inadequate data. As Mitchell points out, when compilers go back before the First World War they are forced to resort to one of two undesirable shifts:

> Either they must change the composition of their indexes from time to time, accepting less satisfactory and smaller samples as they work backward, or they must use materials which do not show the physical volume of trade.[14]

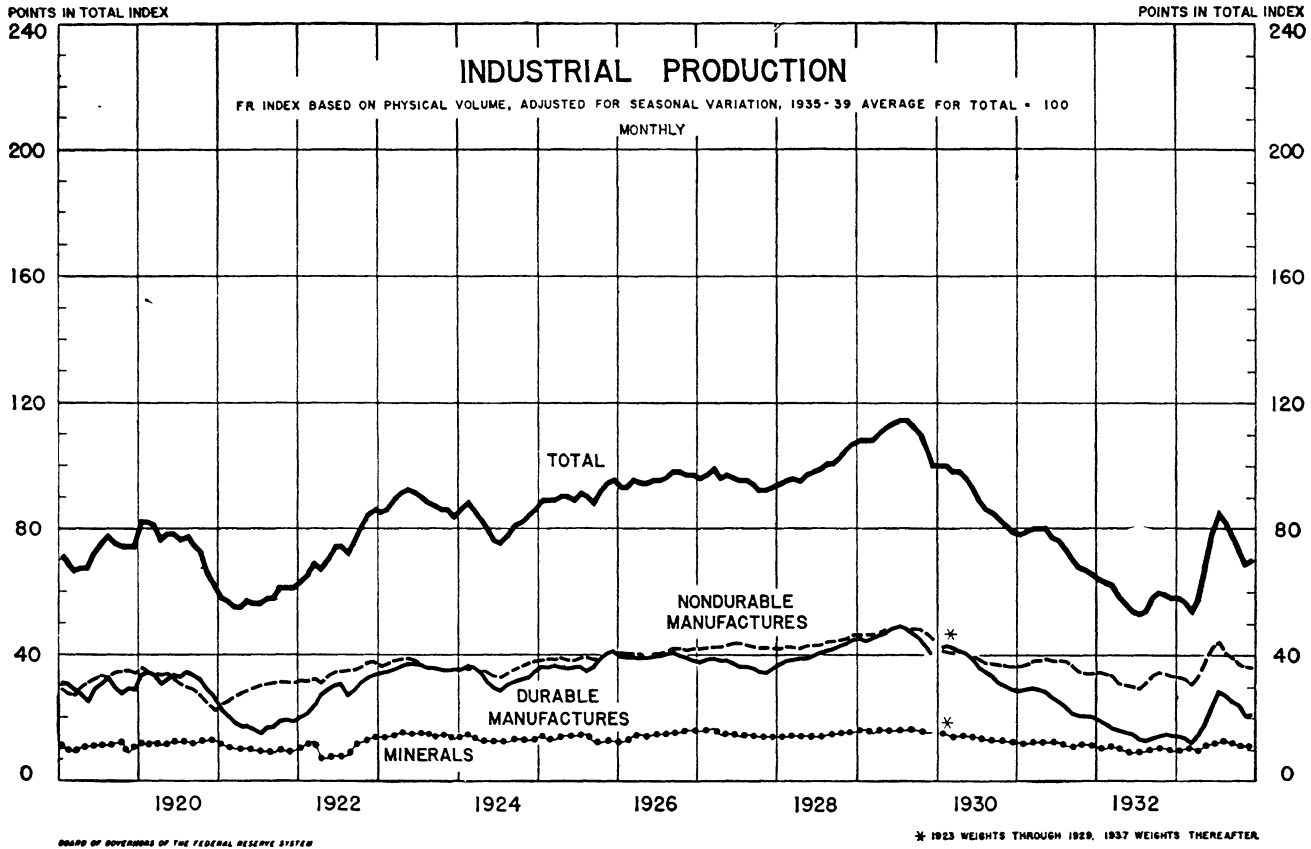
Thus Carl Snyder, in making his "clearings index of business," fell back on the latter alternative, using a deflated "pecuniary" index as a reasonable physical-volume index for years when other data were too scanty to be effective.

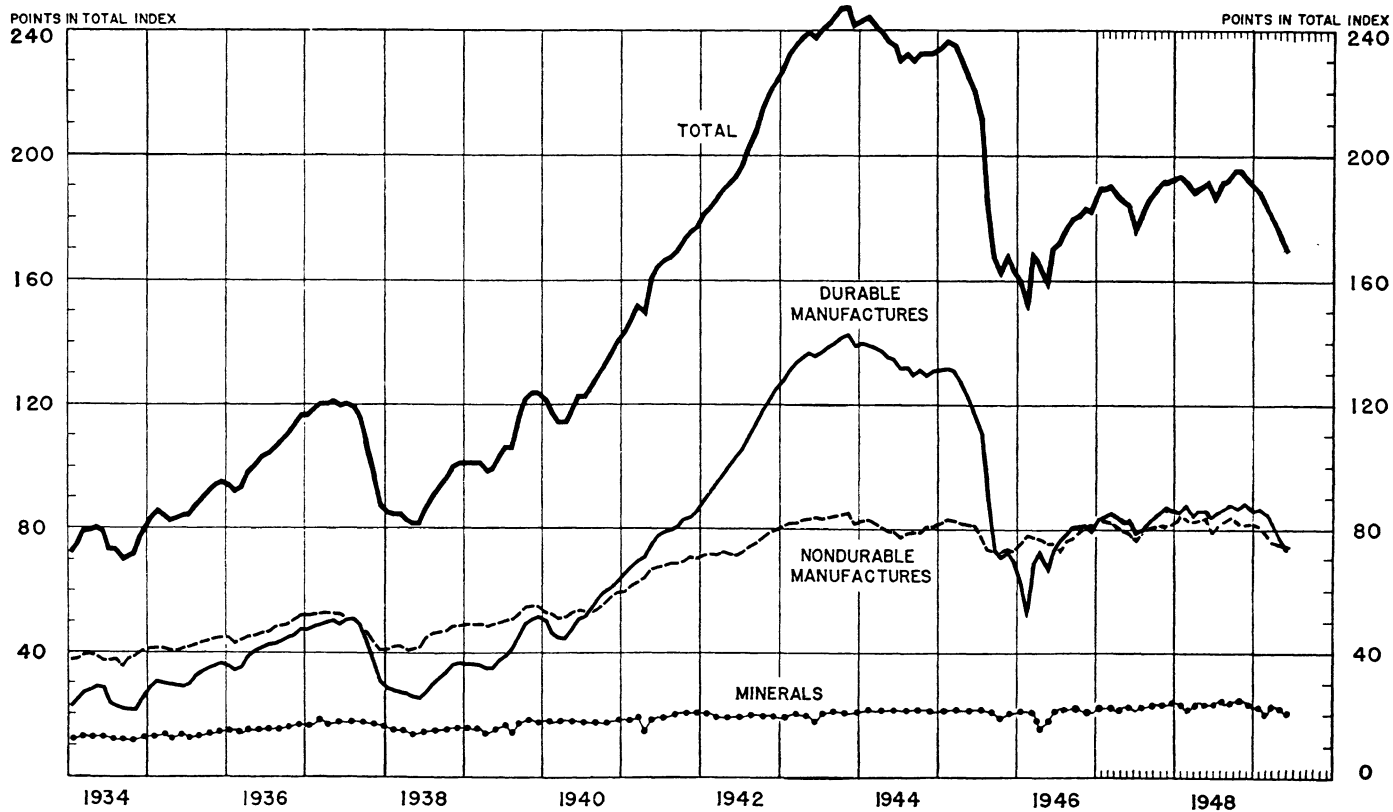
3. *Indexes of general business conditions*

The indexes above described have been one of two kinds: either they were simple representative indexes capable of standing for the whole, such as bank debits, steel production, and so on; or they were indexes of "production," either industrial production proper or the more comprehensive production shown

[18] *New Federal Reserve Index of Industrial Production,* Federal Reserve Bulletin, August 1940. Also, Revision of Industrial Production Index, October 1943.

[14] Mitchell, *Business Cycles,* p. 319.


POINTS IN TOTAL INDEX
POINTS IN TOTAL INDEX
INDUSTRIAL PRODUCTION
FR INDEX BASED ON PHYSICAL VOLUME, ADJUSTED FOR SEASONAL VARIATION, 1935-39 AVERAGE FOR TOTAL = 100
MONTHLY
240
200
160
120
80
40
0
TOTAL
NONDURABLE MANUFACTURES
DURABLE MANUFACTURES
MINERALS
1920
1922
1924
1926
1928
1930
1932
BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
* 1923 WEIGHTS THROUGH 1929, 1937 WEIGHTS THEREAFTER



A points in total index shows the contribution to total output made by each of the three major divisions. It shows the composition of the industrial structure in each month and the extent to which each major division is responsible for changes in the total.

See *Federal Reserve Bulletin*, Sept. 1940, p. 924.

in a "corrected" index of national income, designed to show the change in the physical volume of output.

There are indexes, however, that attempt to go beyond these simpler types and purport to give some kind of picture of what might be called "the general condition of business." Since business cycles are "congeries of fluctuations in many business processes," it would seem possible and desirable to include in an index thereof more than the monetary volume of trade, the physical volume of production, or any other index of a single type of change. Therefore, such an index will include physical production, dollar volume, interest rates, price indexes, the volume of employment, and so on. For example, at one time the *American Telephone and Telegraph Company's Index of General Business* included such diverse data as Bradstreet's price index, the production of pig iron in tons, and bank clearings outside of New York.

It is obvious that the resultant index is not an unambiguous index like those already examined.

> It corresponds to no sum in dollars, to no inventory of goods, to nothing we can count. By nature it is not an aggregate amount but a synthesis of relatives.[15]

The series thus synthesized are, strictly speaking, incommensurable. They cannot be combined except as a statistical expression. Indeed, it is not easy to say just what an index of this sort is supposed to represent. As a problem of statistics, no special difficulty is involved. It is easy enough to combine indexes of various processes into a single index, and to give what seem to be appropriate weights to the several parts. But, no statistical ingenuity can hide the fact that indexes of general business conditions are the least definite and the most artificial of all indexes of the cycle. The index of the American Telegraph and Telephone Company looks like a simple picture of economic fluctuations, and to the observer seems to show clearly just how high and how low business stands in the various cyclical phases. In actual fact, the index is the result of a highly complex and sophisticated process, at each stage of which the judgment of the statistician has entered in. In making it, secular trends and seasonal variations were eliminated from each component index; the remaining fluctuations were expressed as multiples of their standard deviations;

[15] Mitchell, *Business Cycles*, p. 320.

the several series thus refined were weighted and a weighted average computed. These means were multiplied by 10 (the approximate weighted average of the standard deviations of the constituent series), and the result was charted to make the index.

Such an index must inevitably be faulty, inexact, and only relatively reliable. Indeed, it is something like the composite photographs that are occasionally set forth as the picture of a type. Such pictures may possibly gain in comprehensiveness, but there is no question that they lose in distinctness and outline. Although a composite photograph of college presidents may be a sort of college president, it is no actual college president and may give a very poor idea of what any particular college president is really like. The same is true of composite pictures of business.

Furthermore, as of indexes of production, so, *a fortiori,* is it true of general indexes of activity, that the farther back they attempt to go, the less reliable they become. The sample used has to be changed from period to period, and the two ends of the series may be radically different. Because of this, the particular merit statistical indexes have over the business annals—namely, that they permit quantitative statements—largely disappears. They do little more than measure the direction and the timing of change. They cannot accurately measure intensity or amplitude of fluctuation. Indeed, in the United States for any period earlier than the Civil War, the annals are the more useful record.

An example of a complex index

The kind of difficulty involved in these historical series is well illustrated by the *Index of General Business Activity* constructed by Col. Ayres for the Cleveland Trust Company, purporting to show quantitatively the fluctuations of general business about a "normal" from 1790.[16]

From 1919 to date, there are adequate monthly figures—namely, the *Federal Reserve Board Index of Industrial Production.* From 1901 to 1919, there is an equivalent index (*Thomas' Index of Manufacturing Production*), but with annual figures only. These are relatively simple, representative indexes of general activity. From 1855 to 1901, no single index was available, and a composite index had to be constructed from 10 series—namely, pig iron consumption, railroad freight ton miles, cotton consumption,

[16] See Chart at end of Chapter 1.

canal freight, coal production, railroad construction, blast furnace activity, rail production, locomotive production, and ship construction. (Note the heavy weight given to various indexes of transportation.) Finally, from 1790 to 1855, still another composite index had to be constructed from another set of 10 indexes, as follows: commodity prices, imports, imports retained for consumption, government receipts, ship construction, government expenditures, coal production, exports, iron exports, and tons of registered shipping. Both the composite indexes were made to overlap the period following, and devices were used to correct the index where deviation of the original from the overlapped index was noted. Since these indexes were constructed as annual indexes only, monthly data from available single indexes were used to fill in the months. For this purpose, the following indexes were used: from 1877 to 1919, *American Telephone and Telegraph Company's Index of General Business* and data for blast furnace activity; from 1861 to 1877, bank clearings and stock prices; from 1815 to 1861, security and commodity prices; from 1790 to 1815, commodity prices.

The result of all this elaborate calculation is the apparently valid curve of American business activity since 1790. Although the statistical method is ingenious and reliable, it remains unfortunately true that such an index gives us very little effective measure in any but the second half of the chart. It adds little to the evidence available through the annals; it certainly does not put us in a position, for example, to compare the magnitude of depressions in the early and later periods, respectively. The area of black above and below the line of trend (normal) is deceptively exact in appearance; it would be a rash man, indeed, who would venture to say, from inspection of this chart, how serious the depression of 1837 and the early 1840's was as compared with the depression of the 1930's.

The validity of the picture

The preceding discussion has shown that the complex of economic fluctuations to which is given the name of business cycles can, with some degree of fairness, be portrayed by a variety of indexes, but accurately measured by none. The indexes that are simple and definite are not comprehensive enough to be regarded

as a satisfactory representation of business cycles. On the other hand, those that are more comprehensive have to be built up by such ingenious and artificial devices that they cannot definitely be said to represent anything save a statistical fiction. Any collection of statistical indexes, either those examined in this chapter or any suitable alternatives, will be found to have the same faults. Each one represents a somewhat different aspect of the economic process, and none can claim to be representative of the cycle as a whole. If the indexes reach into the past, they will be found to have changed their character as time went on. In addition, one must recall always that the methods of eliminating trends and seasonal fluctuation are rough at best.

But there is this to be said. Although none of the indexes gives the whole picture, and although they differ in details, yet when a group of well-known indexes for a period are compared with one another, they will be found to agree in the broad outlines of the picture presented. Furthermore, if evidence from statistical indexes is compared with that to be found in the business annals for the same period, these also will be found to agree with sufficient fidelity to justifiy a confidence in their conclusions that could not be had from each standing alone.

These comparisons are made in Mitchell's classic treatment, a brief summary of which is here presented.[17]

Five indexes compared

To test the comparability of various statistical indexes of business cycles, Mitchell compared the five indexes of business conditions in the United States which covered by months the longest period of time. These five indexes were as follows:

Index of the Pecuniary Volume of Transactions
- (a) *Frickey's Index of Outside Clearings 1875–1914*

Indexes of the Physical Volume of Trade
- (a) *Snyder's Clearings Index of Business 1875–1924*
- (b) *Persons' Index of Trade 1903–1923*

Indexes of General Business Conditions
- (a) *American Telephone and Telegraph Company's Index of General Business 1877–1925*
- (b) *Snyder's Index of Deposit Activity 1875–1924*

[17] Mitchell, *Business Cycles,* Chapter III, Section VI, p. 3, for a comparison of five general indexes; Chapter IV, Section II, p. 2, for a comparison of business annals and business indexes.

The examination of these five representative indexes reveals a number of interesting similarities and some variations in detail.

(a) In their rise and fall, all the indexes show a "saw-tooth" contour. They are not smooth curves but jerky advances and declines. The indexes change direction every two or three months (sometimes more often) possibly because "the cyclical movements themselves keep producing and overcoming small checks." These reversals are most frequent at the top and bottom of the curves, indicating "that business has a ceiling and a floor, both somewhat elastic or irregular."

(b) All the indexes show resemblance in respect to the amplitude of their month-to-month changes. The distributions of these changes show a marked symmetry and are highly concentrated in an area from +5 to −5 change in points. In all cases the distribution is slightly skewed to the left or negative side, indicating that the most violent changes are declines. In all the indexes but one (Snyder's deposit index), the number of month-to-month declines is smaller than the number of advances, but the average decline is greater, signifying that contraction is the briefer but more violent process. But most of the changes are small in magnitude, less than one half exceeding two "points" on the scale used.

(c) In respect to identifying individual cycles, all the indexes showed major cycles such as those culminating in 1882, 1893, 1907, 1917, and 1920. Minor fluctuations do not show such unanimity: twice the top of one curve remains below the base line of another; twice the bottom is above another's base line. However, "one who studies all five curves with care can draw up a list of business cycles which anyone else can identify with confidence in every curve."

(d) Time sequences, such as the timing of crest or trough, do not show the same degree of uniformity. On no occasion did all the indexes reach the crest or trough of a given wave in the same month, although, on four occasions, three out of the four series then available did so. This fact probably means that turns take place in periods rather than at points of time, and during these periods the various processes measured by the different indexes have time to culminate in either upswing or decline.

If we count from the date when the first of the indexes reaches

a turning point to the date when the last one reaches the same point, we have periods that vary from one or two months to as long as sixteen or seventeen months, the average period at crests being eight months, and at troughs 6.1. *Snyder's Index of Deposit Activity,* probably from being heavily influenced by speculative transactions, reached the crest first in twelve cycles out of thirteen, and the trough in eight cycles out of thirteen.

(e) Since the five indexes never touch crests or troughs at the same time and since neither the order nor the lag of the time sequences is constant, the duration of periods of rise and fall as shown in the respective indexes varies considerably. On the other hand, the average length of rise and fall is relatively uniform. Four of the indexes (excluding Snyder's deposit index) show an average rise of about 2 years (23–25 months) and an average fall of a little over 1½ years (18, 18, 19, and 21 months, respectively). That is to say, the "mode" in cycles is two unequal segments: 2 years of gradually increasing activity, 1½ years of less gradually shrinking activity.

(f) The duration of cycles as a whole shows a relatively uniform average for all the indexes, although the duration of particular cycles differs from index to index. More particularly, the four series that cover the whole period of some 45 years all show the average duration of the cycle to be 42 or 43 months.

(g) The least uniformity among the indexes is found in respect to amplitude of fluctuation as measured in percentage deviations from the line of trend. Neither the deepest depression nor the greatest prosperity is the same in each index. The greatest prosperity by the clearings index was in 1881; by the American Telephone and Telegraph index, in 1907; and by Persons' index, in 1917. The deepest depression was 1878 and 1896 in the clearings index, but 1921 in the indexes of trade and general business conditions. Mitchell suggests that these differences should not be regarded as discrepancies in the indexes, but rather as indications that the processes to which the several indexes relate attained their highest or lowest levels in different cycles.

The conclusions of this comparison undoubtedly help to establish confidence in the validity of the methods used and the usefulness of the evidence obtained. When we consider that the data came from five different sources covering nearly half a century

and including twelve cycles, or, as Mitchell puts it, when we consider that the indexes "were made by different hands, with different methods from different data, to show different things," the substantial similarity in their results and in the picture they give of business fluctuations must give us confidence in their validity as business cycle indexes.

Annals and business indexes compared

Mitchell's second comparison has to do with the business annals and the business indexes over comparable periods of time.

Before, say, 1870 in the United States and 1855 in Great Britain, statistical data were so scanty and so unreliable that only one picture of business is available—namely, business annals. Thereafter, there are two pictures, and it is for this later period that a comparison is made. By reducing the annals to successive periods of prosperity, recession, depression, and revival, and comparing these with the variation in a general business index above and below "normal," the reliability of each in terms of the other can be put to test. This was done for the period 1875–1925 in the United States, and the period 1855–1914 in Great Britain.[18] For the United States, the annals are compared with two statistical indexes, the *American Telephone and Telegraph Company's Index of General Business* and *Snyder's Clearings Index of Business.* On the whole, the agreement is notable. The thirteen recessions shown in the annals are all marked by a decline in the indexes; and the decline is proportional to the severity of the recession as noted by the observers. The same is true of the revivals and other phases.

> When the annals report revivals the curves ascend; when the annals report prosperity the curves fluctuate on levels decidedly higher than in the preceding or following depressions; when the annals report depressions the curves are relatively low.[19]

The chief difference is, as one would expect, that the annals "show but vaguely and irregularly the degrees of prosperity and depression."

In the English case, the annals are compared with *Thomas' Quarterly Index of British Cycles.* Here the similarity is not

[18] See the charts in Mitchell, *op. cit.*, pp. 368–369, 372–373.

[19] Mitchell, *Ibid.*, p. 370.

quite so marked. The annals report no recession in 1860–1861 when the index falls (due to being heavily weighted with cotton). In 1874–1875, the annals report depression when the curve, though declining, is above the base line. In 1881, 1897–1898, and 1910–1911, the annals show prosperity when the index lies below the base line, possibly because reporters tend to regard any recovery after depression as prosperity and any slackening as depression; but these are exceptions. On the whole, the correspondence of annals and index is close.

> The curve usually rises when the annals report revival, stands high when the annals report prosperity, sinks when the annals report recession, and runs on a low level when the annals report depression.[20]

These results help to confirm the validity both of the annals and of the statistical indexes. They make it possible to have confidence that the statistical picture of business fluctuations available in modern times is a reasonably true one and, what is more, that the period when statistics are too scanty to be relied upon can adequately be represented by the longer and wider record which the annals fortunately can give.

[20] *Ibid.*, p. 371.

4

MEASUREMENT AND DESCRIPTION OF CYCLES

THE ANNALS COLLECTED by Thorp and his colleagues give us the record of the largest number of cycles over the longest period of time. When it is considered that cycles can be said to emerge only with a certain type of economic organization which, even in the Western World, has been dominant for perhaps but 150 years, it may be safe to hold with Mitchell that the total number of past business cycles "may well be less than a thousand." Of this total of less than a thousand, the annals isolate and measure 166, which, although not a large number, is a fairly large sample drawn, especially in later years, from a considerable number of countries in all parts of the world. As such, it furnishes an imposing exhibition of cyclical behavior which can yield many interesting clues to the characteristic pattern of this kind of fluctuation. These clues, together with the evidence afforded by the business indexes during the period since 1870, are the basis of the general picture of business cycle behavior set forth in this chapter.

THE PHASES OF THE CYCLE

As noted in the previous chapter, the evidence of the annals seems to justify the division of the business cycle into four recurring phases: prosperity, recession, depression, and revival. But this apparently simple and now familiar classification was not arrived at without much careful analysis of the problem of naming and delimiting the successive cyclical phases. This question deserves some detailed examination at this point.

The idea that business activities may be subject to alternating periods of expansion and contraction seems to have arisen from the study of those dramatic economic episodes known as crises. These periods of tension, strain, and often panic had been known and marked for years. For many years, economists included a section on commercial crises in their textbooks. Critics of orthodox society regarded them as proof of the inadequacy of the economic system. Jevons developed a sun-spot theory to account for their apparent periodicity in the nineteenth century.

But it came to be seen that crises are not isolated phenomena. They are a part—a dramatic one—of a cyclical movement and continuous ebb and flow in the activity of the national economy. For this reason, one might properly consider the crisis to be a phase of a cycle, and the cycle to be a three-phase fluctuation made up of prosperity, crisis, and depression.

The term *crisis,* however, is not quite free from ambiguity. Even today, two distinct meanings are attached to the term: the one regards crisis as part of a cycle and defines it as the turning point at which prosperity passes into depression; the other retains its more popular meaning and defines it as an organic disturbance of economic life bringing loss and often complete ruin to enterprise. That is to say, a crisis, by the one definition, is a turning point in general, but by the other only such a turning point as is accompanied by severe disturbance. (Indeed, one might add a third term—a "panic"—which might be defined as a crisis of unusual severity.)

The definition of crisis as a transition from prosperity to depression is clearly more appropriate to the study of cycles; but it has been so long associated in popular (and even professional) usage with the idea of financial strain that it causes confusion. Many transitions in cycles cannot be described as involving financial strain of such degree as to make the strain, rather than the turning point, characteristic. Hence it would seem desirable to give up the term *crisis* as descriptive of a phase and adopt, with Mitchell, the noncommittal and more scientific term *recession.* The term *crisis,* along with the term *panic,* may then be reserved for their more recognizable and popular meanings, as descriptive of intense strain.

W. M. Persons in his work for the Harvard Research Commit-

tee subdivided the period of recession into two parts: financial strain, marked by monetary stringency and stock market depression; and industrial crisis, marked by fall in price level, distress selling, and the beginning of industrial decline.

Complicating the picture

The recognition of a turning period at the height of prosperity implies recognition of a similar period at the end of a depression, for, doubtless, the behavior of business in the transition from depression to recovery has some particular characteristics not displayed in either of the adjacent periods. Thus we get the sequence of four phases: prosperity, recession, depression, and recovery or revival. The phraseology of this sequence, using as it does the familiar terms prosperity and depression, is appropriate to the business annals. For these annals represent the state of business as seen by businessmen, financial reporters, and similar observers.

It is useful for scientific analysis to avoid words or phrases which, by long popular usage, have certain established meanings. Thus depression has almost come to mean, popularly, not any contraction, but only a severe one, just as prosperity is not any expansion, but only a generous or considerable one. But cycles are not all severe in respect to contraction or generous in respect to expansion. Hence, following Mitchell's lead in his treatment of business cycles in the *Encyclopaedia of the Social Sciences,* we may become quite noncommittal by eliminating the somewhat overcolored terms *prosperity* and *depression* and substituting the purely quantitative terms *expansion* and *contraction.*

The cycle phases then become: expansion, recession, contraction, revival.

Haberler distinguishes the four phases as follows:[1]

> The upswing (prosperity phase, expansion);
> The upper turning point (downturn, crisis);
> The downswing (depression phase, contraction);
> The lower turning point (upturn, revival).

This phraseology coincides with Mitchell's, save for the use of the term "crisis" rather than "recession." Haberler notes that

[1] Gottfried Haberler, *Prosperity and Depression,* Third Edition. (Geneva: League of Nations, 1941), Chapter 9.

the term crisis has a popular meaning of a period of acute strain, and a technical meaning of the turning point marking the passage from prosperity to depression. He uses the term in the technical sense.

Another classification of phases

In his book *Forecasting Business Cycles*,[2] Warren M. Persons has made a classification of the phases of a cycle that differs in some respects from that used by Mitchell. His phases are prosperity, recession, trough, and recovery. Prosperity is the interval of supernormal business, during which the index is above the line of the trend and has not yet turned downward. Recession is the interval of persistent decline from the turning point of prosperity to the trough or bottom of the fall. The trough is a relatively short period when the index is on a "dead" subnormal level, neither declining nor rising persistently. Recovery is the interval between the trough and prosperity. It is the period when persistent advances take place up to the level of normal business.

Compared with Mitchell's description of expansion, recession, contraction, and revival, Persons' terms have a less neutral connotation. Furthermore, they appear to have the logical disadvantage (1) of having two phases in the incline, but only one in the decline, and (2) of having a phase to mark the turning (often rapid) of recession into recovery, but none to mark the turning (sometimes delayed) of prosperity into recession. In addition, there are cycles that cannot be described in these four phases, as where the peak is reached at a level below normal ("submerged peak"). Thus some indexes show the crest of 1895 as a submerged peak, and most indexes place the downturn of 1937 (which followed several years of expansion) at a level below the line of normal. In such periods, the cycle would apparently be a three-phase cycle only—that is, recession, trough, recovery. It would be more desirable to define the phases so that they would be applicable to cycles in general, without exception. Mitchell's phases have this merit.

Some relatively simple descriptions of cyclical fluctuations seem

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[2] W. M. Persons, *Forecasting Business Cycles* (New York: John Wiley & Sons, Inc., 1931), pp. 197–198.

to reduce the phases to prosperity and depression, prosperity being measured by the area above an assumed line of trend and depression by the corresponding area below. This is a popular dichotomy which may serve the particular theories of its authors, but it suffers from the anomaly of being compelled to include in prosperity a period when business is actually declining, and in depression a period when business is advancing. In retrospect, such areas of prosperity and depression may give a sufficiently illuminating picture of good and bad times, but, as a means of describing a cycle actually in process and of throwing light on the sequence of events, they are obviously less effective than the four-phase description of either Mitchell or Persons.

The Length of Business Cycles

There was a time in the latter part of the nineteenth century when observers were much impressed with the apparent "periodicity" of cycles. The crises that were taken to mark the transitions from cycle to cycle appeared with such startling regularity as to lead students to believe that the cycle must have a normal and almost invariable time interval. The great English crises of 1815, 1825, 1836, 1847, 1857, and 1866 were the background of this not unnatural conclusion. The evidence that we have today does not bear out this oversimplified picture. There is no normal, relatively unvarying duration of cycles. We have to be content with an average and the distribution of the various time intervals about the average, as in other statistical observations.

There are various ways in which the average length of cycles can be measured. The oldest method is from crisis to crisis, the dates of which are established by historical records and the consensus of business experience.

The annals with their running descriptions make it possible to establish the dates of cycles with more accuracy. When the annals are used, cycles are measured from recession to recession. As the data for the annals come by years, not months, the duration of successive cycles has to be reckoned to the nearest whole year.

When statistical indexes are available, such as would serve to represent the variations of general business activity, cycles can be measured by the intervals between successive crests or suc-

cessive troughs. When averaged, these intervals indicate the typical duration of a cycle.[3]

On the assumption of some periodicity in the data over a reasonably long period of time, a mathematical approach to the problem is available through periodogram analysis and the calculation of a sine curve.[4] When this is done, a period is established which is, essentially, the typical time interval underlying the many actual variations.

Establishing the dates of successive troughs and peaks of business cycles is a matter calling for careful judgment, as can be seen in the elaborate studies made by Burns and Mitchell.[5]

For each of four countries, United States, Great Britain, Germany, and France, a table of "reference dates" was made showing the months and years of the successive troughs and peaks of business cycles. These dates were first determined by Thorp's Business Annals. The Annals were then checked against indexes of business activity and other series of broad coverage. In this process, the reference dates were tested and at need amended until it seemed reasonably certain that the dates at which cyclical turns had in fact taken place had been determined. As the reference dates are in months, confidence in the dates increases with the extent of the field covered by economic statistics. Thus, the dates would be more reliable for the United States than for the three other countries, and for the later than for the earlier dates.

Any such choice of dates involves a nice degree of judgment. A glance at the chart at the end of Chapter 1 shows a "double bottom" in 1932–1933. The June–July 1932 bottom is lower in the Federal Reserve Bulletin index of production, but most of the Bureau's series show a lower trough in the spring of 1933. Which should be the reference date for the trough? Burns and Mitchell choose 1933.

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[3] Cf. A. C. Pigou, *Industrial Fluctuations* (London: Macmillan & Co., Ltd., 1927), Chapter II, Section 5.

[4] Cf. W. I. King, *The Causes of Economic Fluctuations* (New York: The Ronald Press Co., 1938), Chapter 11, pp. 236–244.

[5] Burns and Mitchell, *Measuring Business Cycles* (New York: National Bureau of Economic Research, 1946), especially Chapter 1, Section V and Chapter 4, Sections III–VI.

When the cyclical turns in leading indexes of economic activity are "sharply angular and closely bunched" (as in the second quarter of 1938 in the United States) the turn can be dated with considerable assurance. When turns are comparatively flat and dispersed over many months (as the peak of 1937) the reference date is a bit elusive. Hence, though the consensus of evidence favors May 1937, the peak may be misplaced by several months. Under these conditions reference dates might well be replaced by "turning zones."

Again sometimes there are substantial reversals of an expansion or a contraction, such as the interruptions of the 1933–1937 expansion that took place July–November 1933, and again May–September 1934. Are these reversals and subsequent recoveries to be counted as cycles; or are they to be ruled out as taking place in too short an interval?

Keeping in mind these qualifications, we may turn to the reference dates for the United States as exhibited in Table 14.

These reference dates can be tested by the behavior of individual statistical indexes during corresponding periods.

Burns and Mitchell have examined the behavior of a large number of specific indexes, in production, construction, transportation, merchandizing, commodity prices, security prices, banking operations, and the like. The great majority of the activities for which statistical information is available show fluctuations of a cyclical nature. Of the American series, only 3 per cent fail to show a cyclical pattern. These are called specific cycles.

If business cycles consist of roughly concurrent fluctuations of many economic activities, and if these reference dates mark the approximate turning points of business cycles, then the cyclical pattern of these specific cycles should synchronize with that of business cycles. Expansions should predominate in the specific indexes during periods marked off as expansion ("reference expansions"), and contraction should predominate in periods marked off as contraction ("reference contractions"). The available evidence indicates that this coincidence of behavior takes place to a substantial degree (Burns and Mitchell, Chapter 4, Section VI).

In a fairly wide sample of 46 monthly series, expansion predominates in reference cycle expansions, and contraction in reference cycle contractions.

In the period 1854–1933, including 40 reference phases, four indexes invariably rise and fall in conformity, two conform in every phase but one, six in every phase but two, seven in all but

TABLE 14. REFERENCE DATES AND DURATIONS OF BUSINESS CYCLES IN UNITED STATES 1854–1938*

Monthly reference dates			Duration in Months		
Trough	*Peak*	*Trough*	*Expansion*	*Contraction*	*Full Cycle*
Dec. 1854	June 1857	Dec. 1858	30	18	48
Dec. 1858	Oct. 1860	June 1861	22	8	30
June 1861	Apr. 1865	Dec. 1867	46	32	78
Dec. 1867	June 1869	Dec. 1870	18	18	36
Dec. 1870	Oct. 1873	Mar. 1879	34	65	99
Mar. 1879	Mar. 1882	May 1885	36	38	74
May 1885	Mar. 1887	Apr. 1888	22	13	35
Apr. 1888	July 1890	May 1891	27	10	37
May 1891	Jan. 1893	June 1894	20	17	37
June 1894	Dec. 1895	June 1897	18	18	36
June 1897	June 1899	Dec. 1900	24	18	42
Dec. 1900	Sept. 1902	Aug. 1904	21	23	44
Aug. 1904	May 1907	June 1908	33	13	46
June 1908	Jan. 1910	Jan. 1912	19	24	43
Jan. 1912	Jan. 1913	Dec. 1914	12	23	35
Dec. 1914	Aug. 1918	Apr. 1919	44	8	52
Apr. 1919	Jan. 1920	Sept. 1921	9	20	29
Sept. 1921	May 1923	July 1924	20	14	34
July 1924	Oct. 1926	Dec. 1927	27	14	41
Dec. 1927	June 1929	Mar. 1933	18	45	63
Mar. 1933	May 1937	May 1938**	50	12	62
	Average		26.2	21.5	47.6

* Burns and Mitchell, *Measuring Business Cycles* (New York: National Bureau of Economic Research, 1946), Table 16, p. 78.

** For cycles since 1938 see Chap. 7.

three, twelve in all but four or five. Thirty-three series out of forty-six show this much conformity.

Moreover the proportion of rising series to the total number of series drops abruptly in passing from a reference expansion to a reference contraction, rising equally abruptly at the trough. In every reference expansion the proportion of rises to total exceeds one-half, and similarly in contraction.

These similarities of behavior enhance the dependability of the reference dates. They are borne out also by the chronologies of various other indexes prepared by other investigators. All of these display reasonably similar timing.[6]

Let us now turn to the measurements.[7]

The Average Duration of Cycles

The annals, with their more extensive coverage, supply evidence of the duration of cycles over a period of some 125 years. For the period 1796–1920 in the United States, and the period 1793–1920 in Great Britain (the only countries for which annals over such long periods are available) durations, measured in years from recession to recession, are as follows:[8]

United States: 32 cycles, range 1 to 9 years, average length about 4 years, most common length about 3 years.

Great Britain: 22 cycles, range 2 to 10 years, average length 5¾ years, most common length 4 years.

It appears that American cycles have been more numerous and of shorter duration than English.

The figures for the United States are supported by the evidence of available statistical indexes. The average length of the cycle in four statistical indexes measuring the activity of general business in the United States in the period 1875–1920 turns out to be in every case either 42 or 43 months. The same evidence is given by Persons' *Index of Industrial Production and Trade,* 1878–1932, which shows an average cycle of 42.8 months. It will be remembered that Joseph Kitchin, after an analysis of bank clearings, interest rates, and wholesale prices in both Great Britain and the United States for the period 1890–1922, established the length of what he calls "minor cycles" (equivalent to our own usage of business cycles) of 40 months or 3⅓ years. W. I. King, fitting a sine curve to the *Axe-Houghton Annalist Index of Business Activity* for the years 1901–1937, disclosed a wave length of substantially 40 months, although in certain years the business graph departed rather widely from the sine curve.[9] Finally, to end this collection of testimony, there are Mitchell's measurements for

[6] Burns and Mitchell, *Measuring Business Cycles,* Table 27, p. 108.

[7] See Mitchell, *Business Cycles, Problem and Setting,* Chapter IV, Section IV, where the duration of cycles as exhibited in the annals is fully analyzed.

[8] *Ibid.,* pp. 388–389.

[9] King, *The Causes of Economic Fluctuations,* pp. 237–238.

cycles in the later period in the United States, in which measuring from trough to trough he finds that 13 cycles, 1885–1927, average 39.3 months, 19 cycles, 1855–1927, average 46.1 months,[10] and 21 cycles 1854–1938 average 47.6 months.[11]

One may be fairly safe in holding, therefore, that the typical or average business cycle in the United States is likely to be more than three but less than four years long.

Although useful for fixing types, averages do not tell us all we want to know. They give no idea of the variation in the length of individual cycles. They give no clue to sequences, or whether cycles are getting shorter or longer, or whether long and short cycles occur in any recognizable order; and they cannot be taken as any more than the vaguest clue to the future. That is to say, there is no particular reason to suppose that any future cycle will be, say, 42 months long, or even that the average cycle will continue to be 42 months long. The forces that make cycles what they are are subject to continual variation, and these variations may at any time radically change the average length of the cycle. What evidence we have establishes average length only for the period from which it is drawn.

Distribution of Cycle Length

Averages are more significant when accompanied by some picture of the distribution of the individual items.

Table 14 shows two significant aspects. (1) Although the average length of the cycles is 47 months, the range of duration is from 29 to 99 months measured from trough to trough, and from 17 to 101 months measured from peak to peak. (2) There is a notable concentration of cycle length within the range of 36 to 46 months, the nine cycles between 1885 and 1914 all falling within this range, and doubtless furnishing the basis for the widely held belief in the 40-month cycle.

This pattern of behavior, with a certain modal tendency together with a relatively wide range of deviation, is exhibited also in the annals.[12]

The 32 cycles that occurred in the United States in the period 1796–1923 show the following frequency distribution:

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[10] *Encyclopaedia of the Social Sciences,* article on Business Cycles.

[11] See Table 14.

[12] Mitchell, *op. cit.,* pp. 391–407.

Length in Years	*Number of Cycles*
1	1
2	4
3	10
4	5
5	6
6	4
7	1
8	0
9	1

The notable feature of this distribution is its heavy concentration, with a pronounced mode, at three years. This may be compared with two other distributions, one showing 39 cycles in England, France, Germany, and Austria in 1866–1920, the other showing 134 cycles in all countries except the United States at various dates to 1920–1925. They are as follows:

England, France, Germany, and Austria, 1866–1920, 39 cycles:

Length in Years	*Number of Cycles*
1	0
2	4
3	7
4	6
5	4
6	5
7	2
8	6
9	1
10	2
11	2

Here there is no pronounced mode and no marked decline in numbers up to cycles eight years in length.

All countries except the United States, various dates to 1920–1925, 134 cycles:

Length in Years	*Number of Cycles*
1	2
2	13
3	20
4	20
5	17
6	18
7	16
8	12
9	6
10	6
11	3
12	1

Here again there is no pronounced mode, no heavy concentration of cycles in any given time length. The distribution does not show a marked peak as do United States cycles, but rather a rounded top.

When the whole array of 166 cycles is put together, the rounded top is much modified by the inclusion of American cycles, and the distribution shows once more a modal tendency and takes a more regular form, of the sort common in studies of social phenomena.

All countries, various dates to 1920–1925, 166 cycles:

Length in Years	*Number of Cycles*
1	3
2	17
3	30
4	25
5	23
6	22
7	17
8	12
9	7
10	6
11	3
12	1

Mitchell fits a logarithmic curve to this frequency distribution and finds that the fit is on the whole rather close.

> From this we infer that, like other biological and social phenomena whose distributions are well described by some form of the normal curve, the durations of business cycles may be regarded as the net resultants of a multitude of factors which are largely independent of each other.[13]

It is doubtful if this pleasing semblance of regularity can be taken to indicate that cycles, like other social phenomena, are subject to the compulsion of underlying law. One hundred and sixty-six observations are not many; further, they are not homogeneous, being drawn at various dates from various countries with different economic characteristics, aspects that cast some doubt upon the validity of gathering them together into a single array.

Periodicity not proved

The variation in the duration of individual cycles from the average as shown above is fatal to the hypothesis of periodicity. There is no "period" for a cycle such as was once thought to exist.

[13] Mitchell, *op. cit.*, p. 419, Chart 25. See also p. 420, note 4.

The apparent periodicity of the crises in the nineteenth century, such as their appearance in England in 1815, 1825, 1836, 1847, 1857, and 1866, breaks down when one examines the facts of the case. Furthermore, the annals do not disclose any regularity in the sequences of cycles of different length. It is impossible to predict at any time the length of the next cycle. This length cannot be deduced from the average, the modal length, the duration of the immediately preceding cycle, or any group of preceding cycles.

Schumpeter advances the hypothesis that the Juglar or major cycles, of some nine or ten years in length, are "readily divisible into three cycles of a period of roughly forty months." [14] Burns and Mitchell hold that their reference dates since 1854 in the United States do not confirm this hypothesis. No arrangement of this data in groups of three consecutive cycles will produce an approximation to Juglar cycles of from nine to ten years. Starting from 1854, and marking the cycles by troughs, the durations of the triplets run, 156, 209, 109, 122, 124, 115, and 116 months. Starting from 1857 and marking cycles by peaks, the triplets have successive durations of 144, 213, 105, 137, 135, and 99 months.[15]

It is a popular opinion that depressions come about every three years, and that every third depression is a major one. Current popular journalism in the 1930's prophesied a major depression in 1940. There was one in 1920, another in 1930; hence one could be expected in 1940. The evidence of the annals does not substantiate these naive expectations.

If any semblance of regularity in this array of cycles exists, it is not in their sequence but merely, as already pointed out, in their tendency to group themselves in the positively skewed curve of the sort often found in biological and social phenomena. Again it should be noted that, although this may indicate some underlying symmetry of behavior, it cannot be explained by any rational process, and it gives no ground for prediction. Thus, if one examines the pattern of distribution of United States cycles for 1796–1923, one finds no cycle of eight years. But this fact does not justify the statement that we may soon expect a cycle of eight years to complete the symmetry of the curve.

[14] See Schumpeter, "The Analysis of Economic Change," *Review of Economic Statistics*, May 1935, p. 8.

[15] Burns and Mitchell, *op. cit.*, p. 442.

Secular changes in length

The annals give some evidence that the average duration of business cycles tends to undergo secular change from one period to another. The extent of this change, and indeed, whether there is any perceptible change depend upon some more or less arbitrary method of determining the several periods; for, clearly, the records could be divided into any number of periods, and in any number of ways. An interesting experiment of this kind was made by F. C. Mills, who examined minutely the annals of 17 countries for evidence of secular trend.[16] As a result of his inspection, he classified his materials into periods determined by the stage of industrialization reached in each of the countries involved.

For the four countries, United States, England, France and Germany, the classification is as follows:

A. Early stages of industrialization
   United States to 1822 (Annals begin 1796)
   Germany to 1866 (Annals begin 1848)
B. Stages of rapid transition
   England to 1831 (Annals begin 1793)
   France to 1876 (Annals begin 1838)
   United States since 1822
   Germany since 1866
C. Stage of economic stability
   England since 1831
   France since 1876

With this arrangement of periods and recognizing the somewhat arbitrary nature of a division based on so elusive a concept as degree of industrialization, Mills presents the following results:

Early stages of industrialization—average duration of cycles, 5.86 years = 70.3 months.
Stage of rapid economic transition—average duration of cycles, 4.09 years = 49.1 months.
Stage of relative economic stability—average duration of cycles, 6.39 years = 76.7 months.

Mills suggests, therefore, a general tendency for cycles to be relatively long during early stages of a country's development, shorter during rapid transition, and longer again when relative stability arrives. This tendency might account for the fact that American

[16] See Mitchell, *op. cit.*, pp. 412–416.

cycles are shorter on the average than English, since the United States was, at least up to the First World War, still in a rather prolonged stage of transition and, on the other hand, Great Britain had reached relative stability. It might indicate, too, that the United States may expect to move into a period when cycles will be of somewhat longer duration.

This evidence is far from conclusive, particularly since the dates assigned to the stages of industrialization are quite arbitrary and subject to wide divergences of opinion.

Burns and Mitchell using Mills' scheme, but revising the reference dates of cycles and bringing cycles down to 1930 find different values for the average duration in the second and third stages.

The comparison is as follows:

AVERAGE DURATION OF CYCLES IN MONTHS

	Mills	*Burns and Mitchell*
Early stage	70.3	
Transition stage	49.1	52.6
Stable stage	76.7	60.

This variation in behavior between the periods is so small and so little different from the variation within the periods as to give but slight support to Mills' hypothesis.[17]

THE LENGTH OF THE PHASES

We have now to examine the length of the various phases of the cycle, as commonly described, and such changes in length as seem to occur with any regularity. In so doing, one must realize that, although annals, our principal source of evidence, give fair pictures of length of cycles as a whole, they leave the length of the several phases subject to a much greater margin of doubt. If the cycle were divided into two phases only—advance and decline—dating and measurement would be relatively easy. The introduction of two more phases, both difficult to establish exactly, makes precision unattainable. The length of periods of recession at the crest and of revival at the trough is subject to possibly wide differences of opinion, an ambiguity which, of course, makes the measurement of the other two more important phases equally uncertain.

[17] Burns and Mitchell, *Measuring Business Cycles*, Chapter 10, Section V, "Business Cycles and Economic Stages."

It is clear that the phases of recession and revival are relatively short periods. Partial evidence from the Annals indicates that transitions take less than one quarter of the average cycle. The distribution of months between the various phases during business cycles in 17 countries 1890–1925 is as follows:

	Per Cent
Months of prosperity	39.3
Months of depression	36.8
Months of recession and revival	23.9

But whether these transition periods have been correctly measured is not easy to know. Where statistical indexes are available not all the indexes change direction at the same time. Some of them lead others perhaps by several months; and no one index is so representative of the cycle to be taken by itself alone. Thus, when revival is going on, prices are rising, interest rates are rising, production is rising, and so on. How much rise in how many indexes must there be before revival has passed into expansion? Clearly, expansion is here when all these indexes have markedly changed for the better, but the degree of change must be a matter of judgment. Mitchell notes that "when it is necessary to define revivals and recessions as the periods within which all of the statistical series in a large collection turn up or turn down, these two phases become relatively long." [18]

It is easier for measurement purposes, therefore, to limit the cycle to two phases, expansion and contraction, as is the practice in Burns and Mitchell's *Measuring Business Cycles.*

With these qualifications, let us see what the measurements show.

The five indexes of American cycles that Mitchell examined for the period 1878–1923 show the average duration of cycles to be 42 months, or three and one-half years. The ascending phase of these cycles, from trough to crest, averaged about 23 months (22.75), and the descending phase, from crest to trough, averaged about 20 months (19.82).[19] A similar story for the period 1878–1932 is told by *Person's Index of Industrial Production and Trade,* which indicates the average length of the phase of incline (recov-

[18] Mitchell, *Business Cycles,* p. 420, Note 5.
[19] *Ibid.,* p. 339.

ery and prosperity combined) to be 27 months, of decline (recession and trough) to be 16 months.

The full array of cycles from 1854 to 1938 as shown in Table 14 shows an average cycle of 47.6 months with an average expansion of 26.2 months and an average contraction of 21.5 months.

On the basis of this varying evidence, perhaps one might be justified in making the rather broad statement that, since 1870, the typical cycle in the United States is about three and one-half years long, of which expansion takes about two years, and contraction about a year and a half.

This indication of the greater length of prosperous over depressed periods seems to be borne out by the evidence of the annals covering various countries and periods of time.

In England, the prosperity-depression ratio—that is, the ratio of years of prosperity to years of depression—for various periods is as follows:

1790–1925	1.11
1890–1913	1.24
1890–1920	1.71

For similar periods, the United States shows the following ratios:

1790–1925	1.50
1890–1913	1.57
1890–1923	1.79

The wide variation in the ratio of years of prosperity to years of depression between different countries, even for approximately the same periods of time, indicates to some degree how much business conditions are affected by the relative degree of political or economic stability. Even countries with settled political structure and mature economic development show varying degrees of relationship between the phases.

Changes in Relative Length of Phases

A striking variation in the ratio of prosperity to depression is shown when the long period 1790–1920 is broken down into subperiods of rising and falling prices. The following data drawn from Thorp's *Annals*[20] show this variation.

[20] Mitchell, *Business Cycles*, Table 30, p. 411.

England	*Years of Prosperity Per Year of Depression*
1790–1815 Prices rising	1.0
1815–1849 Prices falling	0.9
1849–1873 Prices rising	3.3
1873–1896 Prices falling	0.4
1896–1920 Prices rising	2.7
United States	
1790–1815	2.6
1815–1849	0.8
1849–1865	2.9
1865–1896	0.9
1896–1920	3.1

Similar evidence is given by Spiethoff, who has examined the periods 1822–1843, 1844–1873, 1874–1894, and 1895–1913. In the first and third periods, both periods of falling prices, depression is more common than prosperity. In the second and fourth periods, both periods of rising prices, prosperity is more common than depression. In detail, the distribution is as follows:[21]

Period	*Years of Expansion* (Aufschwung)	*Years of Contraction* (Stockung)
1822–1842 (England)	9	12
1843–1873 (Germany)	21	10
1874–1894 (Germany)	6	15
1895–1913 (Germany)	15	4

The evidence that close connection exists between the movements of the general price level and the behavior of cycle phases seems unmistakable. When prices are falling, prosperity has been relatively short, and depression relatively long. When prices are rising, prosperity has been relatively long, and depression relatively short.

The evidence from the later investigation of the National Bureau of Economic Research seems to bear out the testimony of the annals.

Thus using the monthly measures of business cycles in the United States available since 1854, Burns and Mitchell give the following results:[22]

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[21] See *Handwörterbuch der Staatswissenschaften,* Fourth Edition (Jena: Gustav Fischer, 1925) article on Krisen, p. 60.

[22] Burns & Mitchell, *Measuring Business Cycles,* Table 167, p. 437.

AVERAGE DURATION IN MONTHS

	Expansion	*Contraction*	*Full Cycle*
Upswings of Prices	26	17	42
Downswings of Prices	24	25	49

The evidence is all in the right direction. The expansions are longer and the contractions shorter in the periods of rising prices. The expansions are shorter, and the contractions longer in the periods of falling prices. Moreover, in almost every instance, foreign monthly measures move in the expected direction in these periods.

We may conclude that the shape of business cycles is to some extent a function of the long waves of prices.

As these long waves of prices are themselves associated with the long waves of activity known as Kondratieff cycles, it may be that there is a more fundamental relationship that causes the shape of business cycles to be affected by these long cycles.

Depression makes cycles long

One further point in regard to relative duration of phases should be noted. When cycles are unusually long, it is the depression rather than the prosperity which is long. Thus Thorp's *Annals* show that, of 166 cycles with an average length of 5.2 years, 17 lasted 9 years or more. For the whole group of 166 cycles, the ratio of years of prosperity to years of depression averaged 1.14. In the 17 long cycles, the ratio was 0.79; in 11 out of 17, the phase of depression was longer than the phase of prosperity. For the 17 cycles listed, the average depression was 55 months, and the average prosperity was 44 months—that is, depression averaged nearly a year longer than prosperity. The longest period of prosperity was 72 months; of depression, 72, 76, and 100 months, respectively. In the only cycle in the American *Annals* lasting 9 years or more (1873–1882), depression lasted 57 months, prosperity 42.[23]

Similar conclusions are reached by Bratt in his *Business Cycles and Forecasting*[24] from analysis of the evidence furnished in *Per-*

[23] Mitchell, *Business Cycles*, pp. 411–412.

[24] E. C. Bratt, *Business Cycles and Forecasting*, 3rd Edition (Chicago: Richard D. Irwin, Inc., 1948), pp. 217–218.

son's Index of Industrial Production and Trade in the United States, 1878–1932. He finds that the length of cycles that include major depressions is distinctly greater than of those that include minor depressions and that the difference in length is primarily in the length of the depression:

> The cycles including major depressions (i.e., depressions in which the index has fallen more than 15% below normal) have had an average length of 46 months compared to an average length of 35 months for cycles including minor depressions. This is solely the result of the fact that major depressions average longer than minor depressions.

The last two cycles in the United States preceding the Second World War were both abnormally long. Whereas the average length of the cycles 1854–1938 was 47.6 months, the cycle from December 1927 to March 1933 was 63 months long, that from March 1933 to May 1938, 62 months long. The first had a long depression (45 months), the second a long expansion (50 months).

Amplitude of Fluctuations

Measures of the amplitude of cycles are less satisfactory than measures of timing and duration. The degree of variation in the several measures of activity differs widely. The production of durable consumers' goods fluctuates far more widely than the production of nondurable consumers' goods. Producers' goods in general show unusually wide fluctuations. The volume of wholesale trade fluctuates more widely than the volume of retail trade, as do wholesale prices compared with retail. The most commonly used indexes of general business activity, such as the *Federal Reserve Board Index of Industrial Production,* or Ayres' *Index of General Business Activity* are based on processes that have more than average instability, and tend to exaggerate the amplitude of fluctuation.

Keeping these limitations in mind, one may measure the amplitude of cycles by the deviations of a comprehensive index from the line of "normal" or trend.

Ayres' *Index of General Business Activity* (see chart at end of Chapter II) shows the amplitude of cycles for the period 1870–1946 as follows:[25]

[25] Monthly data for this index are to be found in L. P. Ayres, *Turning Points in Business Cycles* (New York: Macmillan, 1939), Appendix A, Table 9.

PERCENTAGE DEVIATIONS OF INDEX FROM "NORMAL" AT TROUGHS AND PEAKS

	Trough	*Peak*
Average variation	−14.4	+12.5
Maximum variation	−50.4 (1933)	+40.6 (1943)
Minimum variation	−2.2 (1888)	+2.0 (1937)

The years following 1929 show abnormal amplitudes of deviation from the trend:

1933	Trough	−50.4
1937	Crest	+2.0
1938	Trough	−36.6
1943	Crest	+40.6
1946	Trough	−5.0

For this reason, possibly a better picture of variation is given by the period 1870–1929.

PERCENTAGE DEVIATIONS OF INDEXES FROM NORMAL 1870–1929

	Trough	*Peak*
Average variation	−11.3	+11.4
Maximum variation	−27.0 (1921)	+15.8 (1916)
Minimum variation	−2.2 (1888)	+5.6 (1895)

There is some evidence that declines are more variable in intensity than rises. Thus for the period 1870–1929, whereas the average rise is 11.4 and the average deviation of the rising items from this average is 4.6, the average fall is 11.3, and the average deviation of the falling items from this average is 5.8.

TABLE 15. AMPLITUDE OF FLUCTUATIONS 1920–1946*

Peaks	*Deviation from Normal*	*Troughs*	*Deviation from Normal*
1920	+12.1	1921	−27.
1923	+14.1	1924	−12.7
1926	+8.7	1927	−4.1
1929	+14.5	1933	−50.4
1937	+2.	1938	−36.6
1943	+40.6	1946	−5.

*Ayres' *Index of General Business Activity.*

There seems to be a greater degree of instability in the declining phase since 1914, as shown in Table 15.

These excessive variations are of course the result of depression and war, and even the evidence of the longer series may be distorted when drawn from a single index.

Mitchell, using 111 observations from five different series, 1878–1923 finds little difference in the variation of individual instances from the average in rising and falling phases.

FIVE INDEXES 1878–1923*

	Average Rise or Fall	*Standard Deviation*	*Coefficient of Variation*
Trough	12.6	7.88	63%
Crest	13.0	7.55	58%

* Mitchell, *Business Cycles*, Table 21, p. 351.

INTERNATIONAL CYCLICAL RELATIONS

One of the most interesting contributions made by the annals is the light they throw on international relations among business cycles.

It is plain from the annals that, in the period covered by them, business cycles are to be found in every leading country of the world, apparently in proportion to the particular degree of industrialization. But the relation between the cycles in various countries, in respect to their magnitude and the timing of their phases, and so on, is complicated and changing. Let us see what the annals have to say about it.[26]

It seems that the great financial "crises" are international, rather than national, in scope. The crises of 1815, 1825, and 1837 were common to England and the United States; of 1847, common to England, the United States, and France; of 1857, to these three plus Germany; and of 1873, to these four plus Austria. All five countries showed recessions in 1882–1884.

In 1890, 17 countries were included in the annals. Of these 17, 10 had recessions in 1890–1891, 15 in 1900–1901, 15 in 1907–

[26] *Ibid.*, Chapter IV, Section V, p. 2. Note that the terms "crisis," "depression," "prosperity," "recession," "revival," are those used in the annals.

1908, 12 in 1912–1913, 11 in 1918, and 14 in 1920. The annals of business show that, by the end of 1930, almost all countries with statistical records had entered the great depression. It is true that the intensity of disturbance was not equally severe. In 1873, the United States, Germany, and Austria suffered more than England and France; 1890 was more severe in England than in the United States or Germany; 1900 was most severe in Germany; 1907 in the United States. All countries seemed to find 1920 severe, but 1929 was most severe in New York, as 1931 was most severe in London. For all that, however, financial and economic crises in any major country tend to produce crises in other countries as well.

Furthermore, other phases of the cycle—prosperity, depression, and revival—tend to be international in scope. The depressions of the 1870's, of 1920, and of 1929–1932, the prosperity of 1906–1907, and the revival of the middle 1890's are found in various countries. The five countries whose records reach back to the 1860's—namely, England, France, Germany, Austria, and the United States—show more years in which the business cycles were passing through the same phases than years in which they were passing through opposite phases. English cycles, probably owing to the peculiar international position of the country, are most nearly correlated with cycles of other countries, particularly with French and German cycles. But English and American cycles tend to show considerable agreement, particularly in the later period.

When any two of these countries are compared for earlier and later periods, it appears that, as time goes on, the degree of similarity between their cycles tends to increase. There is always some difference in the behavior of different countries; indeed, this difference is to be expected both from the occurrence of purely domestic events and from the different stages of development at which the several countries stand at any one time. But as time goes on, local differences seem to count for less. Industrialization of newer countries goes on apace, and out of this industrialization appears a silent and almost unperceived tendency to uniformity which has come to impress the cyclical pattern, even in respect to timing, more and more on all countries alike.

The greatest source of divergence has been the influence of

agriculture, the experience of which must, according to its importance, impose some degree of variation on the economic processes of the several countries. Mitchell suggests that the history of business in such a country as the United States is a single story, diversified by agricultural episodes; and that the world, too, is showing the same general picture. The greatest divergence from the pattern is found precisely in those countries where industry is backward and agriculture is still the dominant activity of the people. The greatest similarity is found in those countries where agriculture has given way in importance before a highly developed industry, finance, and trade. Therefore, one would expect that, as agriculture lost its relative dominance, the influence of cycles and their relative uniformity would grow. This growth will be fortified by the increasing urge to turn agriculture from a way of life into a "business," organized and run under business motives, consciously trying to reduce the disturbing influence of purely natural forces.

Cycles tend to be international in scope

The growing international scope of business cycles revealed in the annals might almost have been taken for granted. The period covered by these records was a period of continually expanding international trade and investment. The international economy was a true world economy, an interdependent and intercommunicating system.

Under such conditions, with international relations reasonably free, and with a gold standard generally prevailing, powerful influences tend to make each phase of a cycle, as it appears in one important area, appear also in others. Any generating force in a major country, such as an invention or a substantial increase in agricultural crops, will tend to increase the demand for raw and semifinished materials from other countries. The increase in prices that usually accompanies this expansion, and which is made possible by an increase in bank credit or other monetary means, will stimulate imports from abroad. Prosperity will encourage the sale of foreign securities and the export of capital. Easy money conditions may cause a flow of gold abroad, easing conditions there also; and so on. Considering the international nature

of the market for all kinds of goods, and particularly the international nature of the money market, with the leveling effect it must have on interest rates and prices, it is to be expected that business expansions and contractions, wherever they originate, would spread to all parts of the industrialized world.

This network of international economic relationships was seriously damaged by the First World War and its aftereffects. Yet even though relationships were only partially restored in the 1920's, the great depression that began in 1929 spread itself inexorably all over the world.

The great crash in the New York stock market from which the slump is commonly dated shocked the financial system of the whole world. Almost immediately in every important country, liquidation first of securities and then of commodities set in. The fall of prices of 1930 was a world-wide fall, differing from country to country according to the types of goods heavily involved.

In 1931, a new impulse to depression began with the collapse of the Credit-Anstalt of Austria in May. This collapse brought a wave of fear lest the whole banking structure of Central Europe, none too strong after the First World War, should prove unliquid; and with this fear began a great liquidation of holdings in Germany. Germany had been closely associated with Austria and was weakened by the long struggle over reparations. The result was a run on German banks that brought the whole financial structure low. The Hoover moratorium belatedly seemed to have saved the situation.

The freezing of credits in Germany turned those who wished to have liquid funds to Great Britain, which, for particular reasons, had also begun to lose the confidence abroad she had so long enjoyed. The summer of 1931 saw a great and continued drain on the gold of Great Britain, which eventually, in September, forced the country off the gold standard. The repercussions of this action were enormous. Most of the stock markets of Europe were promptly closed, and many of the countries of Europe and the greater part of the British Empire were compelled to abandon the gold standard.

The United States, reasonably free from the complications to which Europe is exposed, was not able to avoid this unprecedented upheaval. Investors unable to cash in in Europe turned to the

United States. Securities, especially bonds, were sacrificed in great quantities, causing further stock exchange losses, great export of gold, and much internal hoarding. The industrial slump continued worse than ever.

These financial breakdowns, together with the collapse of prices and the cessation of foreign lending by the great creditor nations of the world, England, France, and the United States, brought almost insuperable troubles to all debtor countries. Most of these countries were producers of agricultural products and raw materials, the prices of which had been subject to the most grievous fall. Unable to finance their normal imports by the sale of exports at such disastrous prices and equally unable to borrow further funds or to pay even the interest on former loans, these countries brought additional damage to the economic structure of the world by defaulting on loans, dumping goods at ruinous prices, and setting up restrictions of every kind on imports and on the ordinary freedom of exchange. The wave of retaliation that this induced in every country of the world brought world trade to the lowest ebb and added one more difficulty to the internal economy of every nation.

The restrictions on economic international relations, begun in this depression to a greater or lesser degree and continued ever since, perhaps mark the final end of the period characterized by Thorp's *Annals.* Twenty years ago, Mitchell was able to write, "the quiet forces working toward uniformity of fortunes must be powerful indeed to impress a common pattern upon the course of business cycles in many countries. And the increasing conformity to an international pattern which the annals reveal in recent years shows that the international influences are gaining in relative importance." [27]

The postwar world gives another picture. We are in a period of international restrictions. The international gold standard, which was broken down in the 1930's and suspended during the Second World War, has not yet been restored. Trade is subject to numerous and burdensome restrictions. Isolationism fostered by depression and war is not yet out of the picture, and regional autarchy seems to be the ambition of powerful nations. Economies that follow a socialist pattern will try to reduce cyclical fluctuations to harmless proportions, and will be eager to insulate

[27] Mitchell, *Business Cycles,* p. 450.

themselves from the effects of fluctuations in economies where cycles are yet uncontrolled. Indeed it may well be that business cycles themselves are on the way out, and that they will come to be regarded as one phase of what Keynes has called "the magnificent episode of the nineteenth century." As to this, only time can tell.

5

GENERAL PATTERN OF A BUSINESS CYCLE

WE HAVE SEEN that cycles, as they are disclosed in the annals of business, develop in a series of phases which, for convenience, have been called "expansion," "recession," "contraction," and "revival." It will now be desirable to sketch a picture of what characteristically happens during these successive phases. In this picture, only broad outlines and tendencies can be presented. A typical cycle is described, not any actual cycle. The details of cycles differ; no one cycle is the same as another. The order of events as well as the events themselves is ever changing. Yet there is sufficient that is uniform, characteristic, and significant to develop a pattern. As Pigou puts it, cycles may not be twins but they are all of the same family. Like families, they have characteristics that are capable of description.

It will be convenient to think of the economic system as being temporarily in equilibrium, in such wise that the entrepreneurs who make the decisions in respect to the use of resources have no motive, taken in the aggregate, to either contract or expand their activities. This situation is not to be found in real life, but it is a convenient assumption and starting place from which to describe the wavelike fluctuation of a business cycle.

This equilibrium is subject to disturbance at all times, and the possible disturbing factors are almost innumerable. Some of these apparently disturbing factors do not, however, have any significant effect. They are merely shifts of resources from one place or occupation to another, following the continual shifts in demand that are proceeding at all times in the economic system. The effect of these changes may be considerable on individual industries

but inconsequential on the total of industrial effort. There is an expansion of *A*'s output, a contraction of *B*'s. The net effect on total activity is nil.

Starters and responses

But other disturbing factors seem capable of affecting, broadly, the whole economic process. They are not of the nature of increases of *A* at the expense of *B*. They stimulate the whole system; they move the entrepreneurs in general to expand their activities, put more resources to work. These stimulants to general activity have been called "originating forces" or, more colloquially, "starters." They are sometimes thought of as originating *outside* the economic system, rather than being generated within; as such, they may be called "exogenous forces." They are best exemplified by changes in agricultural crops, wars, inventions and discoveries, large additions to gold supply when gold is used as money, and substantial changes in consumers' wants. These are real starters in the sense of being powerful enough to engender a general increase of economic activity on the part of entrepreneurs; and they are exogenous in that they do not originate in the ordinary working of the economic system but come in, as it were, from outside, as nonrecurrent isolated and episodic forces.

Now these originating forces set up a series of business responses, the nature of which is dependent on the general complex of industrial and financial conditions. These responses find their expression not only in changes in the volume of productive activity, but also in the volume of bank credit and its rate of circulation, in changes in the rate of interest and profits and wages, in rising and falling prices, and in changes in the ordering and installation of capital equipment. Furthermore, these responses seem to be cumulative in their nature. The impulse from the starter is taken up and amplified by the financial and industrial system, so that changes once begun proceed at a progressively increasing pace and cover wider and wider areas of financial and industrial life.

As little evidence exists that originating forces come at periodic intervals or arrange themselves in any recognizable pattern of appearance, one may conclude with J. M. Clark [1] that it is the cu-

[1] J. M. Clark, *Strategic Factors in Business Cycles* (New York: National Bureau of Economic Research, 1934), p. 17.

mulative responses rather than the starters that give the characteristic wavelike and rhythmic effect of cycles. That is to say, the originating causes (or starters) produce the effect they do because they operate upon and through a particular business system that tends to behave in certain ways. This conclusion is indicated by the fact that business cycles tend to reproduce the same characteristic pattern, irrespective of the nature of the starter or originating impulse, and even though these impulses from outside continually change. As the fundamental financial and industrial relations in our modern economic world do not change much from year to year or to any great degree even from country to country (provided they fall within the scope of modern capitalism), one may expect that various initiating causes would produce, at different times and places, much the same series of economic reactions, and cause the appearance and reappearance of much the same events. In all probability, this tendency produces the roughly similar appearance of cycles over considerable periods of time and over widely separated regions and areas, while allowing for the variation in the behavior of individual cycles such as we would expect from the varying character of the originating causes.

As these business responses are responsible for the shape of cyclical changes, they may be regarded properly as essential causes of cycles. As they are produced by the operation of the system and within the system itself, they may be called "endogenous forces."

Thus the equilibrium with which we started may be disturbed by two rather different forces: on the one hand, originating causes, or exogenous forces, such as war, invention, agricultural changes, and gold discoveries; and on the other hand, business responses, or endogenous forces, shaped by the reaction of the whole business structure to the originating force, and being themselves active causes of further and continuing change.

Let us now examine the operation of these business responses through the several phases of the cycle.

Expansion begins

Under the stimulus of whatever originating cause may have come into play and in the expectation of rising profits, entrepreneurs increase the scope of their activities, put more people to work in their plants, and order more raw materials. The demand for materials

puts people to work in other plants, as does the demand for consumption goods when workers spend the additional wage disbursements made by the entrepreneurs. If the position from which expansion started was one of incomplete employment of resources (as might be the case even on the assumption of equilibrium unless there is perfect competition), the increased demand for goods is satisfied by rapid increase in supply; and the expansion is marked more by increase in production than in prices.

As a considerable increase in wage disbursements is made to men engaged in producing materials or equipment, and as their wages are spent, on the other hand, for consumption goods, there is apt to be a lag in the production of such goods behind aggregate wage payments, and when this occurs, there is a rise in prices. The records of cycles show that expansions are normally marked by an increase in the price level, an increase which appears to be delayed during the early stages of expansion but is stepped up sharply in the later stages. This early delay is usually attributed to the fact that plants are not at the time being used to capacity, so that an increase in output can take place without a proportionate increase in total costs. But as time goes on, output becomes less elastic; bottlenecks appear with rising costs, deliveries are more difficult, and plants may have to be expanded. Under these conditions, prices rise.

This rise of prices is accompanied by, and, in fact, dependent upon, an increase in the volume of monetary means of payment, an increase largely effected by an expansion in bank deposits, a marked feature of prosperity. It would be quite possible for an increase of output to be sold at an increase of average prices without this increase of money; an increase in the velocity of circulation, were it sufficiently great, would accomplish the result. But the evidence seems to indicate that, although velocity of circulation increases in periods of boom, its increase is only enough to account for the increase of output.[2] The increase of prices must be accounted for by an increase in the volume of money.

The rise of the general price level is more marked when the productive activity includes much building of substantial plants, factories, steel mills, or other expensive and durable equipment.

[2] C. Snyder, "New Measures in the Equation of Exchange," *American Economic Review*, December 1924, p. 699.

The payrolls of these building operations add greatly to the volume of spending while no substantially equivalent addition is being made to the output of consumption goods; and this goes on until the processes of construction are completed, and the addition to output for which the construction was designed made available. As we shall see in more detail later, this period of construction, usually called the "period of gestation," is considered by some economists to have a predominant part in making the cyclical process.[3]

Disturbances in price relations

The rise in prices that is characteristic of the expansion phase is, however, by no means uniform. Wholesale prices rise more than retail prices. Indexes of the cost of living that reflect retail prices rise but modestly. Of the wholesale prices, it would seem that the greater the distance from the consumer, the greater and the quicker the rise in price. Thus raw materials rise higher than semifinished goods, and the semifinished goods rise higher than goods ready for the consumer. Prices of farm products tend usually to have the swings of raw materials in general; but they are more erratic and uncertain, owing to the vagaries of nature, which at any time may make for unexpectedly higher or lower prices. These variations in the behavior of different prices seem to be characteristic of periods of changing general price levels. They disturb to some extent the symmetry of the price system, distort price relations, change price spreads between one level and another, and bring about at the same time some more or less considerable changes in the distribution of the national income.

Expansion is marked not only by changes in the relative prices of goods, but also by changes in the various elements of the cost structure. Some elements of cost change quickly; others, slowly. We have seen that raw material prices commonly move up quickly. On the other hand, wages (that is, wage rates) have, in the past, tended to lag, possibly because of the relatively conventional aspects of wages, determined as they commonly are in relation to the cost of living, possibly, too, from the existence of a reserve of labor, the employment of which delays the rise of wage rates. Whatever the cause, wages, and, even more, salaries rise more slowly than

[3] See Chapter 11.

prices at wholesale.[4] Interest, particularly long-period interest, is slow to rise, and in respect to existing debts is fixed. Similarly rentals and taxes, especially property taxes, lag behind in expansion.

This typical distortion of the cost structure brings about a tendency in every expansion period to increase the margin of profit. Because various elements of cost lag behind the general rise in the price level, the margin between receipts and expenditures is widened. Supplementary or overhead costs particularly, and even prime or operating costs in respect to salaries and wages, are slow to move; the increased receipts are not eaten up in increased expense, and hence profits are enlarged. Here, again, there are variations in behavior. Those concerns that enjoy the earliest increase in demand, whose overhead charges are relatively large, and whose operating costs consist more in wages than in materials, reap the largest profits; those with opposite characteristics reap the least.

Expansion reaches its height

This increase of profit and the prospect of its continuance commonly cause a rapid rise in stock market values. All securities, including bonds, rise under the influence of improving expectations. The outstanding change is in stocks, that, reflecting the capitalized values of prospective earnings, register in an exaggerated form the rising profits of enterprise.

The general improvement in the condition of entrepreneurs, arising primarily from the slow rise of costs, is presumably the principal source of the cumulative expansion which is observable in periods of prosperity. Stimulated by the prospects of profit, further investment is made by entrepreneurs. This development is dependent on the expansion in the nation's monetary circulation, especially its bank credit; an expansion which the evidence shows takes place. The improved prospects of business and the high values of securities on the stock exchanges make the banking authorities willing to expand credit facilities. The same circumstances tend to speed up the velocity of circulation of all credit available. This further investment, facilitated by bank credit, is likely to consist largely in additions to fixed capital, plant, ma-

[4] The increased scope and power of labor organizations in the last decade may have reduced this lag substantially.

chinery, and equipment. This capital expenditure is particularly potent in adding to the expansion, making for substantial increases in wage disbursements, and, especially during the period of gestation, tending to add still further to the demand for consumers' goods and the strengthening of the price level.

Part of the background of this expansion is the spirit of confidence and optimism that the increase of output, prices, and profits seems to engender. The records of past cycles bear witness to the importance of the wave of optimistic sentiment which sweeps the business and financial community in periods of expansion. The most dramatic exhibition of this is found in the real estate and stock market booms characteristic of these periods. The general run of businessmen, even the conservative fraternity of bankers, share the sentiment of the time, seem to be caught up in its sweep, and become moved to liberality in credit extension.

An aspect of this optimistic sentiment is seen in the tendency by retailers, wholesalers, and manufacturers alike to add to inventories. Presumably, the moving cause of this behavior is the rise of prices, the continuation of which being assumed makes buying for the future a profitable venture. Of course, so far as this stocking up of commodities takes place, it will increase the activity of producers at a pace out of proportion to even the increasing pace of consumption.[5]

Looking back now over this process of expansion, one can see how, beginning with what perhaps was a relatively small stimulus, activity grows in cumulative fashion until the whole economic system is brought to a relatively high pitch of production. The originating cause sets off a series of productive activities, each one leading to still more, engendering a rise of prices and, with this, a rise of profits, and cumulating in an increase in permanent investment and capital building with construction of buildings and machinery, and back of them, possibly, buildings and machinery for the making of other buildings and machinery until the whole pace of economic activity has reached a very high level.

[5] Oddly enough, the postwar expansion of 1946–1948 with substantially full employment did not produce the optimism normally associated with such a period. Instead, caution seemed to be the prevailing mood, particularly on the Stock Exchange, which, for one reason or another did not reflect the high levels of current activity. Business sentiment, too, was a restraining influence against reckless increases in inventory. Perhaps the fear lest the experience of 1920–21 be repeated was responsible for this attitude.

One might suppose that this process of expansion would proceed until full employment of resources is reached; and furthermore, since the production of goods by each producer is the source of demand for the goods of other producers, that this high level of production might be maintained indefinitely. Unfortunately, this is not what happens. Instead, the rate of activity begins to be slowed down, and sooner or later, by gradual change or abrupt transition, the phase of expansion ends and turns into the phase of recession. The turn of the cycle has come.

The end of expansion

The circumstances surrounding the phase of recession indicate that the cumulative forces making for expansion are progressively weakening, or, if one prefers to put it in another way, are being overcome by a series of limiting forces gradually brought into play by the expansion itself.

1. The first of these is the gradual rise of costs relative to prices. The lag of costs, largely responsible for the growth of profits in the stage of expansion, now at last disappears; and the bulge of profit begins to be cut down. The tremendous pressure of the productive demands in the market for materials and labor and money capital begins to make itself felt in rising prices, wages, and interest rates, rates that have been held back by available reserves but now feel the influence of scarcity. Cost of production rises as the best equipment, workers, and management are gradually all in use and as resort must be had to substandard equipment, inferior workmen, and less effective management. The average efficiency of workers and management alike tends to fall. There may be a good deal of overtime work, which is both costly and inefficient. Labor scarcity in the face of high demand encourages trade union restrictionism; discharge becomes more difficult; and industrial disputes probably are more numerous. If a new plant is built, the pressure on variable costs is relieved but there is a sudden rise of overhead cost, all the greater because of rising costs in the construction and equipment industries where production has reached the dimensions of a boom.

All these factors conspire to raise unit costs and make the price level less profitable to entrepreneurs than they had expected.

2. The problem of rising unit costs, which fundamentally

springs from the ultimate scarcity of efficient means of production, might be met were it feasible to continue to raise selling prices. But this possibility seems to meet with two formidable obstacles: one of these is the limit imposed by the diminishing elasticity of bank credit; the other is the apparently increased difficulty of raising prices without encountering the resistance of consumers.

(a) Bank credit expansion is an indispensable prerequisite for the continuance of rising prices. The selling of an increased volume at an increased average price level must, as we have seen, be accompanied by equivalent increases in the volume or in the velocity (or both) of bank credit—particularly the volume, since velocity seems, from the evidence, to expand no more and possibly less than *pro rata* with the volume of output. In countries on a gold standard, the volume of bank credit that bankers are willing or able to supply has more or less definite limits. As loans and the volume of deposit liabilities grow, there is an increasing pressure on reserves, a pressure that is the greater because the public demand for circulating medium when wages are high and retail trade active tends to withdraw cash from the banks. The situation would be relieved if gold were to flow in from mines or from abroad, but there is no evidence that this tends to occur. More likely, the very opposite will happen. High price levels make gold mining relatively unprofitable and discourage marginal output; and they tend, if anything, to encourage imports and discourage exports, creating an unfavorable balance of trade and a tendency to gold outflow.

Central banks may ease this situation temporarily, unless policy demands putting brakes upon what may be regarded as an unhealthy expansion. But even the facilities of central banks may be under pressure, as in 1920, and eventually this must cause pressure on the reserves of the whole banking system.

The pressure on reserves, brought about by expanding deposits and internal and external drains, is bound in time to make banks raise their rates of interest, scrutinize more carefully projects brought to them, and even put pressure on less desirable borrowers to repay loans. This increase of interest rates and the beginning of credit "rationing" are likely to put a sharp check on further rise of prices. By so doing, they check, also, and probably more abruptly, the rise in stock market values and thus, by putting limits

on the value of collateral, may add still more to the restriction of credit.

(b) This check to rising prices from the action of the banks is apparently reinforced by the accumulating difficulties in the field of consumption. Of course, some prices, such as freight rates and public utility prices, are regulated and not easily increased. Others are fixed by long contracts. Still others have been built up by advertising and, if changed, may stir up consumer resentment. But fundamentally, there may be limits to consumption imposed by the relative stability of what Keynes has called "the propensity to consume." Standards of living are conventional and not quickly raised in times of expansion, so that increased incomes are more readily saved than spent on consumption. Much of the expansion is in the field of durable goods such as houses and automobiles, the demand for which may not easily be increased once the initial expansion has taken place. After all, one house is usually enough. In due time, the great increase in productive equipment characteristic of this boom must reach the stage of active output of consumers' goods, the flow of which is bound to be a depressing influence on the general level of prices. The evidence of these difficulties may appear in a piling up of inventories, indicating production out-running current consumption, or in a great increase of advertising and high-pressure salesmanship. For a while, this effect may be overcome by installment selling, but this involves the credit mechanism and the banking system, and will have the same limits imposed upon it as upon other forms of borrowing.

These strains appear in the economic structure as expansion proceeds. They are not great at first, but they grow; and although they may be overcome for a time, particularly if favorable impulses from outside emerge from time to time, they will reappear again and again. As they do, they are bound to weaken the optimistic expectations of entrepreneurs. Investment opportunity, which for a while has looked so favorable, now approaches exhaustion. If unfavorable events occur—crop failures, disasters at home or abroad, and legislative changes of magnitude—they may be all that is needed to throw the whole business machinery into reverse and will be blamed for the recession that now begins. Fundamentally, the trouble lies in the strains in the economic

structure which seem the inevitable accompaniment of a period of expansion—strains which perhaps can be tentatively described as the result of the inability to maintain adequate balance between all the various parts of the economic process. If, on the average in the last 50 years, the phase of expansion rarely passes two years in length, it is because it takes this period of time for the strains to accumulate and reach the breaking point.

The recession

The recession proper, as we have defined it, covers a relatively short space of time. It marks the turning period during which the forces that make for contraction finally win over the forces of expansion. Its outward signs are liquidation in the stock market, strain in the banking system and some liquidation of bank loans, and the beginning of the decline of prices. Production may continue for a while, as goods in process are carried through to completion and some manufacture goes on for stock; but there is a sharp reduction in orders for equipment and in construction contracts, and many projects are abandoned. Indeed, there is evidence that the earliest sign of recession, and the efficient cause of the weakening of the whole industrial structure, is the fall of production and orders in the capital-producing trades.

The fall in the stock market is the dramatic signal of recession's advent. The sensitive pulse of the state of industrial and financial sentiment is influenced by the various discouraging aspects of the economic situation. Doubtless the fall is due largely to the realization that profits cannot be maintained and the reflection thereof in the minds of the speculative fraternity skilled at discounting the future. Part of the slump may be due to sales by insiders anxious to get out early; part, too, to the pressure of banks on the volume of brokers' loans. The funds loaned in the stock market on call tend to be drawn in when business pressure on funds has grown severe. The rise in call loan rates discourages some speculators and causes a sale of securities to liquidate loans.

The fall in stock market values not merely forecasts the fall in prices and profits but helps to bring it about. Borrowers on stock market security find their collateral shrinking and may have to pay off some of their loans. When they do, they may find it convenient to liquidate holdings of commodities, weakening their

price. The weaker market in securities causes corporations that had considered expansion by sale of new issues to hold these new issues off the market, thereby reducing what would have been orders for equipment or buildings. The weakening of the basis of credit, which all this implies, tightens the money market and makes banks unwilling to expand or even to maintain the volume of loans.

This cumulative wave of liquidation which thus sets in in the stock market, the money market, and the commodity market is the prelude to the more or less prolonged phase of declining activity—to the business contraction—which presently sets in. Whether the beginning of this period will be reached by an orderly, though none the less trying, transition, or whether it will be accompanied by the explosive financial excitement of a crisis or panic, depends partly on the nature of the previous boom, partly on the incidents and accidents of the time as they affect the state of mind of the people, and partly on the good sense and effective organization of the banking community. Some recessions have passed without much sense of financial strain. Thanks to the Federal Reserve System, even the great stock market panic of 1929 was passed through without the accompanying run on the banks that would have been expected in former cycles.[6]

The collapse of confidence

When a crisis, and more particularly a panic, does occur, it seems to be associated with a collapse of confidence and sudden demands for liquidity which, by the nature of things, feed on their own impossibility of satisfaction. This crisis of nerves may itself be occasioned by some spectacular and unexpected failure. A firm, a bank, or a corporation announces its inability to meet its debts. This announcement weakens other firms and banks at a time when ominous signs of distress are appearing in the economic structure; moreover, it sets off a wave of fright that culminates in a general run on financial institutions—everyone for himself and the devil take the hindmost. If the banks attempt to meet this situation with an attitude of studied liberality, preparing to advance funds

[6] What might have been expected in 1929 actually arrived in 1931–1933. The great runs on the German banks came in 1931. And both 1932 and 1933 in the United States brought sharp slumps of confidence in the banking system culminating in the closing of the banks by presidential fiat in March of 1933.

to all who have good name or security and meeting promptly the early demands for cash, the situation may be saved even then. Otherwise, little can halt the panic; and banks may be compelled to issue a general refusal to meet their obligations, commonly concealed behind specious measures such as meeting no checks except those going through clearinghouses or allowing only limited withdrawals. Such was the experience of the United States in 1873, in 1893, and in 1907. The dramatic closing of the banks in February and March 1933 was of the same sort, save that it came at the end of the depression, not at the beginning as one usually would expect.

Whether the end of the period of expansion is a mild recession, a crisis, or even a panic, a more or less prolonged period of industrial contraction and stagnation follows, during which prices continue to fall and a curtailment of productive activity and a decrease in the volume of employment occur.

This phase of contraction must now be described.

The phase of contraction

The characteristic of the period of contraction into which recession merges is the general decrease in economic activity. There is a notable fall in the production of goods and services and in employment. This fall is general throughout the whole field of activity, but it is by no means uniform. Some fields, such as retail trade, are relatively little affected. Others, such as agriculture, show irrational variations due to the weather and the relatively noncommercial nature of the occupation. In manufacture, mining, construction, and transport, the reduction is substantial, especially in the field of capital goods, buildings, machinery, and equipment. As in the expansion, the production of goods near the consumer shows the least variation; that of goods remote from the consumer, the most variation. Communities devoted to the latter type of production have very great unemployment and suffer most from the depression.

Despite the reduction in output of goods and services, the contraction is marked by a fall in the average price level. In the earlier stages, this fall may be caused by the liquidation of inventories piled up during expansion. As the contraction proceeds, it is accompanied by a great reduction in the volume of money in

actual use. The general reduction in activity and the deteriorated prospects of all business result in a substantial fall in the volume of bank deposits. Loans are paid off, as much as they can be. New loans do not take their place. Neither banks nor business seem willing to continue the normal scale of borrowing. This fact reduces greatly the total credit money available. What is available, as well as what currency is outstanding, suffers a substantial reduction in use as expressed in indexes of velocity of circulation. Fear of the future moves many to save for emergencies; the inadequate prospects of profit cause business deposits to be idle; the very fall in the price level which this engenders makes postponement of purchases profitable.

This fall in active purchasing power is the fundamental background of the fall in prices that, despite the general reduction of output, characterizes the depression.

Distortions in the price structure

In contraction, as in expansion, the rate of change in prices is quite unequal. Some goods fall but little; others suffer a veritable collapse. Highly manufactured goods fall less than raw materials or semifinished goods. Agricultural products fall farther than manufactured goods. Wholesale prices fall more than retail prices. Some prices are held up by custom or by regulation; some appear to be subject to private control. All these are relatively inflexible. Other prices have great flexibility. These unequal changes in the price level distort the price structure, change the distribution of income, and may serve to prolong the depression.

Along with this distortion in the price structure appears a distortion in cost-price relations. There is no equal and harmonious fall in costs along with prices. Some costs fall; others are rigid or fall but slowly. Wages and salaries tend to lag behind the price level. Public opinion, custom, trade-union regulation, and resistances of one kind and another conspire to bring about this result. Various expenses lumped as overhead continue for a while without reduction. Interest rates, rents, insurance, and taxes are slow to move downward. For existing debts, interest is fixed and can be changed only by the difficult process of negotiation or the disgraceful resort of bankruptcy. Because of these relative changes in prices and costs, the margin of profit tends to disappear

and be replaced by loss. All of this is very disheartening to business and induces a mood of pessimism that exaggerates the potential losses and, as long as it continues, contributes to inactivity and stagnation.

Thus the circle of cumulative trouble is completed. The weakening of expectations from which the recession started brings about price fall, output reduction, and further fall in prices with fall in profits; and so under the discouragement of falling profits, which now replace what had been at first only a fear thereof, comes another wave of reduction of output with further unemployment, further reduction of purchasing, further fall in bank credit and velocity of circulation, and more deflation of prices. It is this cumulation of forces that makes the contraction so dangerous and in great depressions so severe.

The trough of depression to which contraction has brought the economy may be short-lived; but some depressions go bumping along the bottom for considerable time. (It will be recalled the long cycles tend to be those that include long depressions). When they do, as in 1930–1933, popular sentiment may demand interference by government. But, in past cycles as a rule, other limits to contraction have operated to induce recovery without the necessity of these interferences. Just as in expansion various forces which tend to bring the expansion to an end are eventually set in motion, so in contraction limiting forces arise tending to bring the contraction to an end.

Forces making for revival

The most important of these forces, perhaps, are those that work towards restoring the price relations and price-cost relations so badly distorted by the deflation. Prices at last cease dropping, doubtless partly due to the gradual exhaustion of inventories and the accumulated stores of the period of expansion. Even the most extensive stocks are gradually sold out; and with the slowing up of production, supplies ultimately reach scarcity levels. This stage is reached faster in those fields like mining where output can be controlled; slower in agriculture, where nature and rampant individualism interfere with restriction. But even here, limitation of supply eventually does emerge.

In the meantime, the durable goods on which consumers have

been coasting along are wearing out. Purchases can be delayed but become more and more urgent as time goes on. Clothes, furnishings, automobiles, and ultimately houses are wanted, and they furnish a backlog for future business activity. In industry, reserves for depreciation and obsolescence have been withheld from use under the stress of bad times and the excuse of little wear, but replacements cannot be indefinitely postponed. Even idle factories and equipment deteriorate and get out of date. So much is this so, that sudden bulges of demand may find industry scarcely equipped to take care of them. The mere presence of these potential needs weakens the forces of depression and stagnation. As time passes, these needs become more insistent, likely to overcome greater and greater resistance and be responsive more readily to any favorable events.

While this is going on, the cost-price relation tends to become more favorable. The lagging costs which pinch profits so badly at last begin to fall. The resistance of custom or law or organized groups seems gradually to weaken. Under the growing pressure of funds piled up in financial markets deprived of the ordinary commercial outlets, interests rates sink to low levels. Not only short-time rates but also long-time rates fall, with the accompanying rise in the value of first-class bonds. Long-time interest fixed by contract is brought down here and there by agreement, oftentimes by recapitalization or other financial reconstruction. Rents, insurance, and taxes become adjusted to the lower levels of output and prices. Wages under the harsh influence of unemployment eventually are compelled to come down, sometimes breaking rapidly to levels equivalent to the level of prices. With these direct reductions in labor cost, favorable changes in efficiency appear. The elimination of less effective labor, and possibly the greater zeal of workmen anxious to hold their jobs, tend to increase the output per man and, along with the fall in wage rates, make for substantial reductions in labor cost. Indeed, it may be said that just as in expansion the general level of efficiency falls, so in depression it gradually rises. Not only the less efficient workers but also the less efficient plants and the less efficient managements are dropped, thus lowering the average cost of production.

Under the influence of all these changes, the margin of loss is reduced; in some quarters, under increase of demand and strength-

ening of prices, it may be replaced by profit. As this goes on, any quickening of business may readily start a substantial wave of recovery. It is true that revival may be delayed, despite these relatively favorable influences. Outside events of an unfavorable nature may come in to retard revival, or even to start off another and secondary depression, as happened to the world in general by the financial collapse of the central European countries in the summer of 1931. The longer the revival is postponed, the more the favorable forces which we have described grow in power; and it would seem that in due time, perhaps with the aid of some "originating cause" from outside, they are bound to break through the weakening forces of depression and begin the phase of recovery.

The forces of revival get under way

The first signs of this change of phase, apart from the restoration of price and cost relations characteristic of and essential to the end of the trough of depression, seem usually to be found in the level of stock exchange prices and in the activities of the construction and equipment industries.

Stock exchange activity has a tendency to lead production, and the conditions preliminary to revival are all favorable to this tendency. The imminent recovery of profits is certain to be reflected in the price of securities as long as the exchanges fulfill their function of discounting the future. Moreover, the low level of interest is favorable to an increase of brokers' loans and encouraging to a growth of bullish sentiment.

This increase of stock market prices is accompanied by, and favors, an expansion of construction and other capital projects. Not only does this rise of security prices give fair warning of a coming revival and so hasten building in preparation therefor, but the improvement in prices is favorable to new issues and makes the financing of long-time projects easier. Furthermore, the difficulty of making profits during depression tends to encourage invention and improvement. It is a common observation that, at this stage in the course of the cycle, inventions are most likely to be made or, having previously been made, to be put into active operation. For various reasons, therefore, capital expansion is likely to proceed, and it has been the experience of many

recoveries in the past that the capital-producing industries lead the others out of the depression.

If this expansion proceeds on any substantial scale, the payrolls and other incomes paid out will serve as the starter for still other projects, and, by the kind of cumulative process we have already examined, industrial activity gets rapidly under way, and the phase of revival tends to move on into the phase of expansion; the cycle is ready to repeat itself once more.

Are starters needed for a new expansion?

It is a debatable question whether recovery to anything more than relatively modest heights can come about in the absence of some one or other of the originating causes that, as we have seen, are commonly responsible for the beginning of a period of expansion after equilibrium has been attained. Some writers hold that the recovery from depression is so stimulating to confidence, the necessary production to make up for the low output of depression so substantial, and the conditions imposed by lagging costs on the upward path so favorable to profit levels, that recovery will move into expansion without any outside or "exogenous" cause. In this view, cycles once started are continuous and self-generating, each phase producing the conditions necessary to the appearance of its successor, and so on in an endless chain of causation.[7]

But there is some ground for believing that this self-generating process could not go on indefinitely. Frictions of one kind and another are likely gradually to bring the cyclical tendencies to a halt in the absence of sporadic originating causes whose function in this respect is to keep the cycle going. Possibly, too, entrepreneurs would be able to foretell the behavior of a self-generating cycle to such a degree as to enable them to make stabilizing plans that would effectually iron out cyclical fluctuations. But there is a good deal of doubt whether any purely self-generated expansion has ever existed. It is probably true that every revival can be found to be associated with favorable events of the "originating" kind. In the United States, a long tradition has caused business in slump to look for favorable agricultural conditions to bring about revival; and a good deal of the disappointing difficulties in

[7] See also W. C. Mitchell's account of the phases in the article "Business Cycles," in the *Encyclopaedia of the Social Sciences.*

the prolonged depression of the 1930's is attributed to the fact that agriculture, once the helper, was then in a state of having also to be helped.

It is possible, too, that various other factors may delay recovery and make more than usually important the possibility of a starter emerging to give the desired impetus. Thus, at the present time, the slowing growth of population may deprive industry of one of its most reliable aids to recovery, for population growth is claimed to be the principal source of the continued demand for houses, construction, and equipment. Again, there is some evidence, which will be discussed more in detail later,[8] that wages are becoming more rigid. There is a greater unwillingness to lower wage rates, an unwillingness which is rationalized as a need for maintaining the purchasing power necessary for industrial prosperity. Whether justified or not, this rigidity of wage rates may make it harder to bring costs into relation with prices after recession. There has been also a growing reluctance to scale down capitalizations. Bondholders are not willing to reduce their claims. Furthermore, evidence exists of an increasing rigidity of some prices, apparently under the control of monopolistic groups or under the sway of imperfect competition—a rigidity that is particularly important in that it seems to affect the field of capital goods production, the low demand for which is the cause of some of the deepest areas of depression. One may add to this the fact that an apparently growing fraction of consumption consists of very durable goods, such as automobiles, electric equipment, and so on, the service of which can be extended over relatively elastic periods of time, thus making for still further potential postponement of replacement demands.

This formidable mass of complications, all of which tend to retard recovery, may make it more difficult to hold that recovery is self-generated out of depression. They indicate that originating forces, such as invention, new industries or commodities, favorable crops, great discoveries of gold, or even war, may, after all, be required. Doubtless they furnished much of the background for the prolonged effort of the New Deal to supply the impetus by all sorts of government intervention.[9]

[8] See Chap. 24.

[9] See also P. H. Douglas, *Controlling Depressions* (New York: W. W. Norton & Co., Inc., 1935), Chap. IV, "Does a Depression Cure Itself?"

The nature of cyclical disturbance

This series of cumulative responses that we have now traced through the successive phases of the cycle shows plainly enough that cyclical behavior does not conform strictly to the "normal" reaction of the economic system to disturbances of equilibrium. "Normally," the economic system is a self-regulating, self-correcting mechanism. Disturbances to equilibrium set in motion forces that act to restore the equilibrium. In economic phenomena, as in natural phenomena, changes brought about by any force act to neutralize that force. A rise in prices due to change in demand increases the profits of producers and leads them to produce the additional supply necessary to restore the former price level. A fall in wages in one quarter causes a movement of workers to other quarters, thus checking the fall. It is these quasi-automatic reactions to disturbances that limit their effects and help to keep the economic system in equilibrium. In short, the equilibrium, on these assumptions, is stable.

Business cycle behavior violates the conditions of stable equilibrium. What the business cycle discloses is a fundamental instability in the economic system. If it is moved from equilibrium, the forces set in motion are not forces tending to restore equilibrium; rather, they are forces causing the system to move farther away from equilibrium than before. This progressive departure from equilibrium continues until the resultant strain sets up limits which even the cumulative forces of expansion or contraction, powerful though they are, cannot overcome.

Doubtless, if one wishes to strain a point, even this process might be embraced in the concept of "normal" behavior. The very process of expansion up to recession and of contraction down to recovery shows that even the most powerful disturbances set up forces which in due time bring them to an end. In this sense, what is a business cycle if not an example of the self-correcting mechanism by which disturbances are got rid of? It is true that the delay is often considerable and the disturbance seems to be a long time correcting itself, but perhaps this is only a matter of degree. Despite their familiar pattern of expansion and contraction, minor cyclical fluctuations pass off without any more disturbance than is commonly found from the multitudinous non-

cyclical changes to which the economic system is exposed. While major cycles are more spectacular, it is hard to draw the precise line where what is going on should be described in terms of cumulative departure from equilibrium or, contrariwise, as self-correcting reactions to disturbance.

It must be admitted, however, that a cycle, if it is an example of self-correcting responses to disturbance, is, from the point of view of efficiency, a very clumsy one. If, for example, a substantial increase of money occurs in a country, the appropriate reaction is a new equilibrium on a higher level of money incomes and prices, just as, in the opposite case of a decrease in money, the appropriate reaction is to a lower level of money incomes and prices. The fact that the former can be brought about only by the troublesome and exciting process of a boom, and the latter only by the quite painful experience of a depression, is disheartening, especially since the "correction" in each case is so violent that it sets up an equally violent counterdisturbance, to be corrected in its turn by another overpowerful correction, and so on in a possibly endless series of fluctuations. It is unfortunate to be always delaying correction so long that equilibrium is never restored, for the social strain involved and the individual hardships and losses caused by this labored process of adjustment are among the most serious of our economic difficulties. For this reason, one is justified in regarding business cycles as an example of cumulative disturbance rather than of spontaneous, though tardy, correction.

6

GREAT DEPRESSIONS

SOME DEPRESSIONS SEEM to stand out from all others. They may be called "great depressions." They appear like landmarks in the industrial history of a nation. In the United States, it would probably be conceded that the depression following the crisis of 1837, the prolonged depression of the 1870's, the double depression of the 1890's, and the great depression of the 1930's loom tragically above the most serious of the other recorded fluctuations in economic activity.

True, there can be no absolute agreement on the list of these great depressions. Some would doubtless include the depression of the 1840's or that of the 1880's. The difficulty lies in the problem of measuring severity. Long and short depressions are easily picked out. The annals are competent to show these; and we have seen that longer-than-average cycles, where they have appeared, take their length from the abnormal length of depression. But length of depression is not synonymous with severity. It is the *depth* as well as the length that makes depression severe, and depth or intensity is not easy to measure. Such indexes as we have covering the cyclical history of the United States are relatively unreliable in respect to the earlier period; and even if they were more reliable, they do not include homogeneous materials from one period to another. Hence it is practically impossible to compare the relative intensity of such depressions as that of 1837 and that of 1873; or indeed to know with any certitude what severity really meant in those earlier years.

After the Civil War, indexes become fairly comparable, and it is possible to compare intensity as well as length. One way of

doing this graphically is to measure the distance from the top of peaks to the bottom of troughs. Another is to measure the fall of the index below the line of normal. Thus Bratt, in his discussion of depressions, determines major depressions as those in which the index falls by 15 per cent or more below the line of normal. Furthermore, these measures of intensity correspond with measures of length. The longer depressions tend to coincide with the more severe.[1]

Probably, however, the evidence of history and the consensus of opinion, rather than precise measurements, would have to be our clue to the great depressions. If we assume they can be agreed on, it is tempting to ask what causes these occasional great depressions. Are they fortuitous, the result of chance factors conspiring to produce an abnormal conjuncture of unfavorable events? Or on the contrary, do they follow some pattern, some sequence or order traceable in the history of fluctuations? The present chapter is devoted to this problem.

Are there trends in depressions?

Some writers hold that depressions disclose the simplest type of pattern, the trend. One group, like the optimists of the 1920's, believe the trend to be one of diminishing intensity; others, particularly Marxian socialists, believe the trend to be one of increasing intensity. The former, basing their convictions on the increasing control by central bank authorities and on the stabilizing measures of sensible businessmen, were inclined to believe that great depressions, at least, were a thing of the past. The latter, on the other hand, thinking in terms of the allegedly increasing exploitation of the working masses and the difficulties of reconciling vast expansion of fixed capital with the low purchasing power of the people, insisted fanatically that depressions were becoming more intense—each major slump worse than the last, and the worst still to come. The optimists seemed to be borne out by the relative stability of the 1920 decade; the pessimists, by the rude interruption of the 1929 crash.

Such evidence as we have, however, indicates that neither of these conflicting views is right. Statistical material for the period

[1] E. C. Bratt, *Business Cycles and Forecasting*, 3rd Edition (Chicago, Richard D. Irwin, Inc., 1948), p. 246.

before the Civil War is too scanty to give any positive picture. The quantitative measurements available thereafter reveal no trend. Mitchell, after analyzing five important indexes in the years 1878 to 1923, fails to find any certain evidence that the severity of depressions is progressively changing. Snyder's clearings index of business and (less clearly) Frickey's index of clearings suggest, if anything, a growing mildness; but the other three indexes, which perhaps measure more accurately the activity of production, disclose no observable trend.[2]

Similar conclusions are reached by A. R. Eckler in a recent study of the severity of depressions.[3] Using a statistical measure based on various activity indexes and measuring the severity of depression by the percentage decrease from the highest year after which decline began to the year marking the bottom, Eckler ranks the major depressions in the following descending order of magnitude:

1929–1932
1873–1878
1920–1921
1892–1894
1882–1885
1907–1908

These results do not indicate any persistent trend in intensity, either up or down. It is true that the depression of 1929–1932 is the most severe of all those occurring within the period for which adequate statistics are available, but there is no evidence that depressions arrange themselves in an ascending order of severity culminating in this great catastrophe. On the contrary, one has to go back to 1873 to find the depression that ranks next in severity.

Primary and secondary postwar depressions

The progressively severe depressions that followed the First World War, which gave plausibility to the theory of the increasing

[2] W. C. Mitchell, *Business Cycles, The Problem and Its Setting* (New York: National Bureau of Economic Research, 1927), pp. 343–349.

[3] A. R. Eckler, "A Measure of the Severity of Depressions, 1873–1932," *Review of Economic Statistics,* May 15, 1933. See also Burns and Mitchell *Measuring Business Cycles* (New York: National Bureau of Economic Research, 1934), pp. 402–403, especially Table 156, where both expansions and contractions as exhibited in three well-known indexes of American business activity, 1879–1933, are ranked in order of intensity. There is no observable trend.

intensity of depressions, are held by some economists to be an example of a pattern of postwar depression that can be found repeated in each of the periods following the major wars in which the United States has been involved. This theory of primary and secondary postwar depressions is advanced by Col. Leonard P. Ayres, economist of the Cleveland Trust Co.[4]

There is some evidence that great or major wars are followed by two distinct depressions: a sharp, but relatively short, depression as war ends, which may be called the *primary postwar depression;* and, after a period of recovery and expansion, a long and severe depression, which may be called the *secondary postwar depression.* Thus, at the end of the Napoleonic Wars, there was a primary depression in 1820, and a secondary beginning in 1825; after the Civil War, a primary depression in 1865, and the great secondary depression beginning in 1873; after the First World War, a primary depression in 1921, and the great depression of the 1930's.

The varying patterns of the two postwar depressions find their origins, it is held, in the great rise of prices which war engenders and the somewhat different consequences of this price rise upon the two principal economic classes: those engaged in agriculture and other extractive occupations, and those engaged in manufacture, industry, and trade. When war comes, with rising prices, the extractive industries enjoy the greatest prosperity; their prices are the highest of all prices. Land values rise rapidly; there is a great increase of land under cultivation, much of it obtained by an equally great increase in the issue of mortgages. The industrial population is not having such a good time, however, for while business is brisk, cost of living is now rising rapidly and industrial disputes are common.

When the war ends, there comes a short and sharp depression, marked primarily by a collapse of the farming boom and the prices of foodstuffs and raw materials. This collapse is the primary postwar depression, which, however, is soon ended and is followed by a period of rapid expansion in which industry and the urban population enjoy great prosperity.

During this period of prosperity, when food is cheap (for farmers continue to be depressed) and real wages are high, there is a

[4] L. P. Ayres, *The Economics of Recovery* (New York: The Macmillan Co., 1933) Chapter 2.

great surge of urban industry, accompanied by a boom in construction and in real estate values and by the development of a great wave of speculation in securities. In due time, this prosperity destroys itself, as the boom runs to excess and the farm population continues to suffer from low purchasing power. The result is the secondary depression, deeper than the first and wider also, since it now affects all sections. The rural community plunges back into the trough; the urban population, depressed in its turn, makes deflation and contraction general. Profits, wages, and prices have to be adjusted, and during this process the formidable volume of debt presses very hard.

There seems to be, therefore, a normal sequence of events: (1) commodity price inflation, (2) farm prosperity and farmland speculation, (3) price deflation and a short primary postwar depression, (4) a period of city prosperity and widespread speculation, and (5) secondary price deflation and a long secondary postwar depression. This sequence of events takes about 15 years to run its course. Three of these sequences appear in the history of the United States: (1) from the peak of prices of 1815 to the recovery of 1829, (2) from the peak of prices of 1864 to the recovery of 1878, and (3) from the peak of prices of 1920 to the recovery which apparently began in 1933.

This sequence of postwar events has been the foundation for much of the current speculation on the probable behavior of business following the Second World War. The primary postwar depression, corresponding to that of 1920–1921, was expected to arrive some time in 1947.

The rise in prices since the end of price control with its discouragement to buying, especially in housing; the slowing up of inventory demand and factory reconstruction as the most important needs of business are filled; the uncertainty of an export expansion based to a substantial degree on loans abroad; all these aspects of business resemble those ruling in 1919–1920, and seemed to foreshadow a similar ending.

Following the analogy still further would lead one to expect a substantial postwar boom after the primary depression, based largely on the great volume of deferred demand especially for housing and for durable goods. These developments having run

their course, the secondary postwar depression would arrive. Thus, unless effective stabilizing measures could be devised, a great depression might be expected to emerge midway in the decade of the 1950's.

The relation of depressions to long waves of prices and production

The possible connection of major depressions with the great wars that have afflicted this country and the world in general opens up further possibilities. Ayres has called attention to the sharp rise of prices during war, but closer examination of these war periods shows that the price rise is not merely an incident of wartime, but in fact, the culmination, dramatic and rapid it is true, of a long period of price rise going back far before the war. The price peak of 1815 ended a rise of prices which began in 1793; that of 1864, one that began about 1841; and that of 1920, one that began in 1896. What is disclosed here are the peaks of the long waves of prices, the nature of which has already been discussed in Chapter 1.

These long waves of prices, as we have seen, appear to be associated with the long waves of activity called "Kondratieff cycles." It is at the culmination of these long waves that wars have appeared, and it is when the long wave turns down that the dramatic collapse which Ayres calls "the secondary postwar depression" makes its appearance. Wars themselves and the depressions that follow them may be only part of the great pattern which the Kondratieff cycle describes.

Kondratieff has pointed out how many things that seem fortuitous can be explained in relation to long waves of activity.[5] Long waves affect the ratio of prosperity to depression in the shorter business cycle. In the long recession, agriculture suffers the most and has the deepest depressions. Inventions are encouraged in these great recessions, and through their exploitation lay the foundation for the next long upswing. Gold production tends to increase at the bottom of the downward phase, particularly as the long upswing proceeds. The upswing is marked by

[5] N. D. Kondratieff, "Long Waves in Economic Life," *Review of Economic Statistics*, November 1935, pp. 105–115.

the enlargement of colonial areas as great economic empires seek markets. At the end of the upward phase, wars tend to break out.

Thus on this theory neither invention, nor gold production, nor the exploitation of colonies, nor wars are haphazard. All are related in some causal way to long waves of economic activity.

Hansen[6] develops this theme at length and offers the hypothesis not only that wars are bred on the upswing of long cycles, but that revolutions are bred on the downswing. The Napoleonic Wars at the end of the first upswing; the Crimean War, the wars of Prussia with Austria and France, the wars of France and Italy with Austria, the American Civil War on the second upswing; and the First World War at the end of the third upswing illustrate one phase. Similarly, the revolutions in Europe in 1820, 1830, and 1848 in the first downswing; the growth of revolutionary Marxism in the second; and the revolutions in Germany, Italy, and Spain in the third downswing illustrate the contrary tendency during the long downswing.[7] To fit this hypothesis, the Second World War would have to be regarded as the continuation of these revolutionary movements, as indeed it may well have been.

It is not difficult for theory to advance reasons for this sequence of events. Upswings are times of advancing output, search for markets, growth of profits, and foreign investment. The pace of competition, both at home and abroad, is sharpened. The growing wealth of nations makes them able to increase armaments competitively; their growing rivalry tends to make them willing to use them. In the end, war breaks out.

War brings a long period of good times to an end. Prices rise to abrupt heights, and at the end of the war comes collapse, with many repercussions. Gold production already has declined, bringing falling prices. The general disruptions set up by the war, the disturbance of monetary systems, and the dislocation of price-cost relations are a more or less prolonged influence towards depression. For years, activity will move at a slower rate.

Such a situation breeds distress. Those classes that are most harshly affected by the situation look for violent means of restora-

[6] A. H. Hansen, *Economic Stabilization in an Unbalanced World* (New York: Harcourt, Brace and Co., 1932), Chapter 6.

[7] See also A. L. Macfie, "The Outbreak of War and the Trade Cycle," *Economic History*, February 1938.

tion. Governments become chronically unpopular; measures for restoring good times are not effective. These are the conditions that make for political unrest; and only the soundest and best established governments are able to avoid internal disturbance. Some governments are overthrown, more or less peacefully. Revolutionary movements continue until the wave has ebbed its farthest. Thereupon, with the rise of prices once more and the increase of the pace of economic activity, the wave of discontent begins to wane, and the danger of revolution seems to pass.

The social and economic disturbances following major wars are impediments to prosperity. Against their influences the vitality of business enterprise tends to wear itself down. These are conditions that breed prolonged slumps. Historically, it is in such periods that our major depressions, those that began in 1825, 1837, 1873, 1893, and 1929, made their appearance.

Coincidence of various waves of activity

The possible appearance of major depressions at the turning point of "long waves" or "Kondratieff cycles" leads to another conjecture—namely, that major disturbances may be due to the coincidence of similar phases of the various cycles which can be traced in economic activities. The amplitude of fluctuation of a given wave can clearly be intensified if it happens to occur along with a similar fluctuation of another wave. Thus there is some evidence that in prewar years the greatest danger of a crisis in the United States came in the autumn, for it was then that the seasonal drain on monetary centers took place. Because of this, in years when the rising phase of the business cycle reached its top, it more easily passed over into recession in the months of seasonal strain than at any other time.

Now there are many wavelike fluctuations of industry, not only seasonal variations but minor, Juglar, and Kondratieff cycles. Because of their different wave lengths, these fluctuations have now opposite, now reinforcing effects. Thus the rising phase of the Kondratieff cycle tends to subdue the normal depressions incident to business cycles, creating a preponderance of prosperity; whereas the falling phase of the long cycle increases the force of cyclical depressions and makes for a longer and deeper slump.

It is conceivable, therefore, that major depressions can be

traced to this kind of synchronism. Joseph Schumpeter, who holds that the evidence of modern cycles indicates the coexistence of minor cycles (40 months), major or Juglar cycles (8–10 years), and Kondratieff cycles (50 or 60 years), finds that the deepest depressions in the period covered by his material, namely 1825–1830, 1873–1878, and 1929–1934, all came at periods when the corresponding phases of all three cycles were in coincidence. The year 1930, for example, saw each of these cycles in its downward phase. The short cycle that began in 1927 was on the downswing, the Juglar cycle was repeating the slump of 1920, and the long wave was now well into the downward phase that had begun around 1920.[8]

Hansen holds that the more severe depressions may be a function of the building cycle. The depressions of 1837, 1857, 1873, 1893, and 1929 coincided with a sharp curtailment of building construction. Each of these depressions was of unusual severity and duration, recovery being delayed by the depressing influence of the slump in building.

As would be expected, the depressions that fall in the rising phases of the building cycle namely, 1847, 1864, 1883, 1900, and 1920 were relatively short in duration and small in amplitude.[9]

A mild confirmation at least in respect to the duration of business cycles during building cycles is given by Burns and Mitchell. Their evidence is as follows:

AVERAGE DURATION OF BUSINESS CYCLES IN MONTHS[10]

	Expansion	*Contraction*	*Whole Cycle*
Upswing of building	26	21	47
Downswing of building	24	22	43

These differences in expansion and contraction follow expectations; but they seem too small to be significant.

In a recent study devoted to every kind of cycle, in natural as well as economic phenomena, Dewey and Dakin note the coin-

[8] J. Schumpeter, "The Present World Depression," *American Economic Review*, March 1931, Supplement, pp. 179–180. See also his *Business Cycles*, pp. 161–174.

[9] A. H. Hansen, *Fiscal Policy and Business Cycles*, 1941, Chapter 1, pp. 23–24.

[10] Burns and Mitchell, *Measuring Business Cycles*, Chapter 11, Section I, particularly Table 426, p. 164.

cidence from time to time of the corresponding phases of four fundamental rhythms.[11] These are

1. The 54-year rhythm of prices (Kondratieff cycle).
2. The 9-year rhythm (Juglar cycles).
3. The 3½-year rhythm (Kitchin or minor cycles).
4. The 18-year rhythm (or building cycle).

As these all reach low points in the period 1951–1953, the authors suggest the possibility of a serious and growing crisis approaching that time, which, based as it is on fundamental rhythms, cannot be avoided or halted (though possibly ameliorated) by any preventive measures government may decide to take. This would seem to be, in prospect, one of the great depressions.

One may take comfort however thereafter, for all these cycles will be in their rising phases, holding out the promise of "important constructive accomplishment and prosperity in the general life of the nation."

The coincidence of various waves of activity might serve, at more or less calculable intervals, to bring about a greater than normal depression, but the evidence that we have of great depressions seems to indicate the presence of other factors not explicable by any cyclical fluctuation. We have broadly referred to these as "structural changes." Such structural changes may come about as the result of some great political disturbance, principally wars, and will therefore be periodic to whatever extent wars are periodic; or they will come about through great technological changes, so great in extent and so sweeping in their consequences as to upset the normal adjustments of the economy.

Those who, like Schumpeter, look upon all cycles, especially the Juglars and Kondratieffs, as the result of waves of innovation, may be able to fit even structural changes into the pattern of cyclical fluctuations. But the suspicion remains that structural changes may elude any cyclical scheme. That is to say, structural changes are, after all, nonrecurrent, nonperiodic changes. They cannot be anticipated, nor can their effects be calculated in advance. When they come, they come as isolated episodes, not as

[11] E. R. Dewey and E. F. Dakin, *Cycles, The Science of Prediction* (New York: Henry Holt and Company, 1947). See especially Chapters VI–IX, inclusive, and Chapter XVI.

phases of a recurrent pattern. Because they do come in this manner, the great depressions to which they probably contribute so much must be, to some extent, isolated episodes also. They are fortuitous, the result of factors that are essentially factors of chance, conspiring to produce an abnormal conjuncture of unfavorable events.

The Great Depression of the 'Thirties

The events of the 1930 decade show how complicated are the forces that go to make a great depression. The account that follows shows how many concurrent influences, all of them capable of adding to the difficulties of the time, were at work during this period.[12]

1. In the first place, there was the familiar business cycle recession. The period of the 1920's had been marked by prolonged prosperity, at least in industry. This prosperity had been particularly notable in the field of construction and capital production, and it had gone on with only minor interruptions for some seven years. That is to say, it had proceeded through three minor cycles, interrupted only by two relatively unimportant recessions. During this period, there had been the usual expansion of credit, on a larger than usual scale, with the resultant increase of profits, although this profit increase had come despite any increase in the price level and must have arisen, therefore, from rapid changes in costs. The downturn came when the cumulative strains that seem to bring about the end of periods of prosperity finally had their way.

2. In the second place, the dislocations in world economy and in the economy of many individual countries brought about by the First World War were still causing trouble. True, the world had begun to resume to some degree its normal progress, but the return to normal conditions was far from complete, and disruption of economic relations was still serious.

The productive system of Europe had been seriously affected by war conditions. The great destruction of wealth and loss of man power had set Europe back in relation to the rest of the world. This setback was accentuated by the political settlements

[12] See League of Nations, *Course and Phases of the World Economic Depression* (Geneva: League of Nations, 1931), Chapter VI, Section A, "The Character of the Depression."

after the war. The large number of small states into which the Treaty of Versailles had divided the prewar empires broke up the economic unity of Europe and created areas of uneconomic size and inadequate resources, whose weakness their rulers tried to offset by various methods of protection, tariffs, trade restrictions, and similar devices. Abroad, there had been a great expansion in the hitherto nonindustrial areas of the world, first under the pressure of the war demands, and later because of the ambition to capture markets lost by Europe. Thus Japan, India, Malaysia, Australia, and Canada entered the industrial field. These shifts of power remained a disturbing factor preventing readjustment.

In Europe also, among the belligerent countries, established monetary systems many decades old were completely disrupted by the events of the war and postwar periods. All without exception abandoned the gold standard during wartime, and all experienced various degrees of inflation. Inflation, followed in the postwar period by deflation and devaluation, brought great hardship to the business communities and caused sweeping and undeserved redistributions of the national income. When, after much painful effort, the gold standard was re-established in this country or that, the different valuations in gold bestowed upon their monetary units created inequalities in export and import relations that did much to prolong the confusion and difficulty that afflicted business. Thus England made its monetary unit so high in value in the restoration of 1925 as to penalize exports; and France seems to have undergone the opposite experience, undervaluing its currency by the valuations of 1926, and stimulating exports.

As a result of these various situations, the movements of gold throughout the world became quite abnormal. Gold tended to pile up in some countries and be withdrawn from others. At the end of the decade, two countries, France and the United States, had come to have between them the major share of the world's gold. This unusual distribution of the gold supply tended to cause falling prices in other countries and engender a chronic depression.

The losses of the war and the movements of gold, together with shifts in the course of world trade, had introduced a new situation in the relation of capital-investing countries to the world economy.

Germany, known before the war as one of the three great creditor nations annually investing large sums abroad, lost this status, and as a result of compulsory liquidation of capital holdings abroad and of the loss of territory and markets following the war, became a debtor nation on a large scale. On the other hand, the United States, formerly a debtor nation, found it possible during the war to buy up foreign-held capital investments within the country, and furthermore to invest such large sums abroad in Canada, South America, Europe, and the Orient as to rival Great Britain as a creditor nation.

These great capital shifts were of unprecedented magnitude, introducing into the world economy an equally unprecedented situation in regard to the movements of imports and exports which tend to follow the monetary investments. Added to all these shifting currents were the formidable movements caused by the reparations imposed upon Germany and the correlated payments made by European countries on war debts owed to the United States—a source of disturbance troublesome not only by the magnitude of the capital shifts involved but by the train of uncertainty which it always carried with it.

Indeed, uncertainty and unrest marked the whole period. Europe, torn by the war, hovered precariously between democracy and dictatorships. Even the most stable countries were afflicted with widespread political unrest. Others, such as Russia and Italy, had already gone the way of revolution. Still others, such as the numerous states of Eastern Europe, were ready to change at any time. These conditions were not favorable to orderly economic recovery.

All these factors, hangovers of the war, conspired to weaken the economic resistance of the civilized world, made it difficult to bring about restoration of good times, and set up a condition when any setback might develop into a major catastrophe in which concerted antidepression policies on the part of various governments were almost ruled out of possibility.

3. In the third place, the long wave of prices, which had reached the culmination of its upward phase at the end of the First World War, now seemed to have set in definitely downward. The high levels of gold output reached before the war were beginning to recede. The high point of gold production was reached in 1915

with an output of $470,000,000. The output, after shrinking during the war, rose in the postwar period, but even in 1928 was only $408,000,000. The situation of the world gold-mining industry caused a committee of the League of Nations to anticipate even smaller outputs than this, reaching as low as $370,000,000 in 1940. Meanwhile, the increase of trade during the postwar decade and the steady pressure for gold to fulfill the reserve requirements of those countries that had been moved to restore the gold standard served to raise the value of gold and lower the price level. By 1925, the world's price level, which had seemed to have been stabilized at about 50 per cent higher than prewar, was definitely, though slowly, beginning to decline.

The experience of the past and the obvious deductions from economic reasoning indicate that this secular trend of prices downward would add to the virulence of whatever depression might finally be precipitated.

To this must be added the extraordinary monetary deflation that accompanied the course of the depression. The total of deposits subject to check in the commercial banks of the United States fell from $22.8 billions in 1929 to $15 billion in 1933. The annual rate of turnover of all deposits in commercial banks fell from 30 in 1929 to 15 in 1933. These figures represent a very great fall in the total monetary purchasing power in use.[13]

4. In the fourth place, stimulated partly by the necessities of war production, the pace of technological change seems definitely to have undergone a considerable increase. In the United States, this development had found its expression in the burst of innovations that flowered in the period, especially automobiles and all kinds of electrical equipment, and also in the rapid spread of scientific management, which in many ways was even more revolutionary. These same tendencies, often referred to as "rationalization," were working in Europe also—notably in Germany, where they had led to rapid changes in the productive equipment of the country.

These technological changes necessitate much shifting of resources, both capital and labor, and sometimes, when change comes fast enough, outrun the power of absorption that industry in general normally enjoys. The figures of unemployment dur-

[13] See *Federal Reserve Bulletin*, January 1940.

ing the prosperous decade of the 1920's in the United States, although admittedly faulty and unreliable, seem to indicate a growing difficulty of finding re-employment for workers displaced by technological change.

Of all the fields where technological change occurred, agriculture was perhaps the most striking example. Here mechanization and improvements making additional cultivation possible in all kinds of soils and climates, aided by the great demand for agricultural staples caused by the war, had substantially increased the area under cultivation and added greatly to the annual agricultural output. The normal reduction in demand materializing at the end of the war would, in any case, have brought about some considerable fall in agricultural prices, and one which, considering the slow adjustment of the agricultural community toward more profitable levels of output, was bound to be serious and relatively lasting. The continued effects of mechanization and improvement, amounting to an agricultural revolution, kept pressing on the price level still further, with the result that, although some recovery took place from the serious deflation of 1920–1921, agriculture continued to be a relatively depressed economic area throughout the entire decade.

This prolonged depression in agriculture, perhaps more than any other single factor, greatly weakened the general economic structure, not only in agricultural countries, but in all parts of the world. When the slump of 1929 came, with a renewed fall in prices, the great and added distresses of the agricultural world promptly acted to extend the depression in every quarter. In the past, periods of depression have been brief when agriculture has been prosperous; and in the United States, good crops and high purchasing power of the farmers have always been looked for as the force pulling the country out of slump. When agriculture becomes involved in a crisis of its own, then depressions seem likely to be of long duration and exceptional severity. In the great depression of the 1930's, farmers, instead of being an aid to recovery, had themselves, by all sorts of government expedients, to be lifted out of their own slump.

5. In the fifth place, factors of an entirely different sort—possibly fortuitous, possibly the result of a long and persistent trend—entered into the picture. These various developments tended

apparently to make the economic system more rigid, more inflexible, and less able to make the necessary adaptations imposed by continuous and often sweeping change.

It is a commonplace of economic observation that the economic mechanism must be sufficiently flexible to enable capital and labor and management continually to flow from places and uses where they are less valuable to places and uses where they are more valuable. Were industry static, methods of production and demand for goods unchanging, this process would be unnecessary; but the incessant changes of methods of production brought about by technology, and the equally incessant changes in demand brought about partly by technology and partly by the caprice of the consumer, require flexibility in our economic system as a prerequisite to unimpeded operation. This flexibility can be had only by the willingness of capital and labor to move, by reasonable willingness to undergo reductions of interest and wages in occupations where, for the moment, demand is low, and by reasonable flexibility of individual prices. Where wages or prices or production are not flexible, it is not easy to bring about that constant shifting of resources which is necessary not only for full employment and best utilization, but, at times, even for the effective continuation of productive operation in general.

From the evidence of the 1920's, it seems that flexibility was by no means perfect and may, indeed, have been gradually decreasing. This situation may have been the mere culmination to notable proportions of trend already going on for some time, or it many have sprung up in the conditions surrounding the economic system following the great disturbances of the war. Whatever the source, there the growing inflexibility seemed to be.

In the field of wages, labor unions, backed by social insurance and to some extent by a growing public opinion that interpreted variations in purchasing power as responsible for economic instability, were moving toward establishing wage rates as fixed charges on industry. In production, monopolies and semimonopolies, anxious to avoid the instability of competitive bidding, were thinking in terms of "administered prices." In one field and another, where conditions of production seemed to be out of control and low prices a continued aggravation to the producer, governments had entered in to fix prices by intricate regulation.

The period was one of "valorization" and various other control mechanisms. Coffee, rubber, sugar, and other raw materials came within their scope. Toward the end of the decade, the great agricultural staples were brought under regulation, headed by the spectacular efforts of the Federal Farm Board approved by the American government in 1929.

Whatever the merit of these mechanisms in themselves, there seems little doubt that they introduced another rigid element into the operation of national economies. This growing inflexibility of economic structures all over the world at a time when, because of the war and the impact of technological change, adjustments were unusually important, was bound to intensify any depression that might occur.

That these rigidities and controls were increased, not diminished, when depression finally broke is, of course, well known. Every effort was made to uphold wages, prevent prices from falling, peg the prices of bonds, and control the levels of exchange rates. The world as a whole gave itself up to a veritable orgy of tariffs and other restrictions on trade, which added a final touch to the sum of controls to which the world was subject.

Such was the combination of circumstances that surrounded the coming of the great depression. Business cycle recession, structural changes consequent upon the First World War, a change downward in the long cycle of prices, technological changes of magnitude, especially in the field of agriculture, and what seems to be a growing inflexibility in respect to wages and prices and output in various areas; some chance or other had brought together these formidable factors to bear upon the economic systems of the world. It seems probable that, in their various interrelations, they were responsible for the severity of the depression.

Whether this pattern of events was to be expected or could be deduced from the experiences of other periods, especially those that followed great wars, is very doubtful indeed. Perhaps it will turn out to be unique, an isolated episode, explicable but nonrecurrent, in the varied history of the vicissitudes of business. If it has more than this significance, it can be only because it may represent a marked and definite stage, a turning point in the

trend, of capitalistic society. To this possibility we must now briefly turn our attention.

The possibility of chronic depression

It is conceivable that the depression that hung over this country for a decade was not merely the result of the various forces analyzed above. The difficulty experienced in achieving more than a temporary recovery until the advent of war, may indicate the presence of something more fundamental than anything we have yet examined. It is possible that powerful influences are now at work, making against complete recovery and for a more or less prolonged economic stagnation. Some have held that capitalism has reached a turning point and that the driving forces that made it such a powerful engine of economic well-being have lost their vigor—hence the great depression, the difficulty of recovery, and the continued unemployment despite all our efforts. In short, progress, so characteristic of the nineteenth century, may have been interrupted, and the long upward trend checked at last.

This problem of what has come to be known as "secular stagnation" was presented by Alvin H. Hansen in his 1938 Presidential address to the American Economic Association, and we may well follow his analysis.[14]

The great economic expansion of the last century was based on the triple foundation of: (1) technical innovations and the rise of new industries based thereon, (2) the opening up of new territory or new resources in old territory, (3) the growth of population. These three sources were the prime causes of that great and continuous increase of capital formation and investment that gave the period its vigor. Through them was made possible not only a continued rise in the level of real income, but also a fairly full employment of the productive resources, human and other, of the country. Apparently, only through great capital investments has reasonably full employment been reached. Only

[14] A. H. Hansen, "Economic Progress and Declining Population Growth," *American Economic Review*, March 1939, pp. 1–15. See also S. E. Harris (Ed.) *Postwar Economic Problems* (New York: McGraw-Hill Book Company, Inc., 1943), Chapter 4, "Secular stagnation?" by Alan Sweezy; and Benjamin Higgins, *Concepts and Criteria of Secular Stagnation in Income Employment and Public Policy*, Essays in Honor of Alvin H. Hansen (New York: W. W. Norton and Company, Inc., 1948).

thereby has it been possible to find outlets for the great and growing volume of savings made by the people of a rich country.

These foundations of our economic structure, it is argued, are beginning to be threatened. Population growth is declining, even in the United States. In the 1920's the population increased by 16,000,000; in the 1930's by approximately 9,000,000.[15] The world's frontiers are closing. The era of development and settlement of new territory is coming to an end. And while there is yet room for industrialization of economically backward countries, political disturbance, and the forces of narrow nationalism will impede investment.

Hence, two of the props of our material progress have been largely taken away, leaving us to depend more than ever before upon the future of technology and invention. Technology and invention will have to be responsible for perhaps twice as much capital investment as when population and new territory played their part.

As the stagnationists see the matter, this is asking too much from technology. With well-to-do societies continuing to accumulate large volumes of savings, and with the newer industrialized areas adding their quota to the flow of saving, the pressure on investment outlets will continue to be severe. Doubtless the pressure will be eased from time to time. The First World War with its great destruction of capital, and now the Second World War and its aftermath with the need for capital rehabilitation all over the world, put off the problem for a time. But only for a time, for the reconstruction period over, once again the pressure for investment outlets will appear, and once more the danger will threaten that society will fail to maintain the high levels of output and employment of which it is capable.

The stagnation thesis obviously reflects the depressed decade of the 1930's. There is no certainty that the current decade will tell the same story. Indeed, even the 'thirties can be explained in other terms. Population has been growing at a declining rate

[15] As seems to be characteristic of war and immediate postwar periods, the population during the first years of the 'forties increased at a substantially higher rate than in the 'thirties. At the rates for the first eight years 1941–1948, the absolute increase for the decade would be 15,022,000, a percentage increase over 1940 of 11.4 (compared with 15.6 in the 'twenties, and 7.2 in the 'thirties). Presumably this is a temporary interruption, caused by the war, in a long secular decline in the growth of population.

since 1850, and the geographical frontier must have been pretty much closed by 1900. It is strange that only in the last decade should the consequences of these long influences become apparent.

Furthermore the 1930's were marked by a distinctly discouraging climate for business. It was a period of great government activity, much of it unfamiliar and alarming, and it saw a rapid expansion in labor unions and a marked increase in their aggressiveness. These developments, it is held by critics of the stagnation thesis, are adequate to account for the relatively depressed condition of investment. Indeed, considering the extent of these hazards, the expansion of income and output in the 1930's was quite remarkable.

But these handicaps to investment are not inherent tendencies in the economy. They may disappear at any time, and be replaced by factors favorable to enterprise. Moreover, investment opportunities have had a fashion in the past of reappearing to confute the pessimists. The ways in which we dispose of income may change toward higher levels of consumption. And, as we shall see in Part III, the government need not lie idle in the face of a stagnating economy. Its fiscal policy can be directed toward encouraging investment or consumption. Public investment in all kinds of worthwhile projects, roads, airports, hospitals, low cost housing, and so on, can be called in to supply the investment outlets the field of private capital fails to offer.

With these possibilities in mind, one would be rash to predict that, the current postwar expansion over, we will fall once more into a period of chronic and prolonged depression. Indeed, the present high levels of employment and output may mean that the economy is entering a new and extended period of expansion, possibly a new Kondratieff cycle, subject to interruptions by recessions, it is true, but not by the prolonged periods of relatively low output that are the mark of a "mature" economy.

As to the outcome, only time can tell.

7

THE WAR CYCLE

WE HAVE ALREADY NOTED that war is one of the "originating forces" or "starters" that set up cyclical responses. Minor wars may without objection be classified among the accidental random factors making for industrial fluctuations. But major wars produce such formidable reactions and elicit such almost spectacular responses as to stand in a class by themselves. The Second World War with its impact on the economic system is an admirable illustration of what wars can do.

The demands of government in total war bring about all the characteristic behavior of an economic expansion. The earmarks of any period of expansion are cumulative increases in employment and output and income; usually some monetary inflation with distortion of price relationships; considerable shifts in income distribution with rapid rise in profits, lagging wages, and considerable tension in industrial relations; and substantial increases in the volume of plant and equipment. In a major war, all these phenomena appear. But they appear in an exaggerated form. The physical expansion of output is greater; the forces of monetary inflation are more severe; the shifts in income are more substantial; and industrial disputes, if uncontrolled, are more intense; expansion of industrial equipment is more remarkable than in the usual peacetime expansion.

The strains in the economy that accompany any period of expansion (and in the event bring it to its close) become so formidable in a war expansion that government controls have to be called in to prevent the war effort from being more and more seriously impeded. Scarce commodities have to be appropriately ap-

portioned to war production; labor and other resources have to be encouraged and prodded to move to the right places; price controls have to be set up to prevent unendurable inflation, together with a comprehensive scheme of rationing; some procedure has to be developed for settling industrial disputes, as despite all efforts to prevent it, profits and the cost of living rise disadvantageously to working people; and public expenditures on plant and equipment needed for war purposes must take the place of the customary flow of private investment capital.

All these procedures emerged sooner or later, not only in the United States but in all countries at war.

Let us examine this in detail.

The expansion

Table 16 shows the change in gross national product or expenditure and its constituents from 1939. These figures represent the expansion of total money values in the war and postwar periods.

TABLE 16. GROSS NATIONAL PRODUCT OR EXPENDITURE, 1939–1948*
(Billions of Dollars)

Year	*Gross national product*	*Personal consumption expenditures*	*Gross private domestic investment*	*Net foreign investment*	*Government purchases of goods and services*
1939	90.4	67.5	9.0	0.9	13.1
1940	100.5	72.1	13.0	1.5	13.9
1941	125.3	82.3	17.2	1.1	24.7
1942	159.6	90.8	9.3	−0.2	59.7
1943	192.6	101.6	4.6	−2.2	88.6
1944	212.2	111.4	6.4	−2.1	96.5
1945	213.4	122.8	9.2	−1.4	82.8
1946	209.3	147.4	26.5	4.7	30.8
1947	231.6	164.8	30.0	8.9	28.0
1948	252.7	176.8	38.8	1.8	35.3

* Source: Economic Report of the President.

N.B. Gross private domestic investment includes business expenditures on plant and equipment, residential construction, net addition to inventories.

Net foreign investment is the excess of exports over imports (exclusive of gifts, lend lease, or other unilateral transfers).

If we had a reliable "deflator" for the war period, the gross national product could be reduced to "real" terms, by dividing

the value figures by the appropriate price index, such as the index of consumers' prices or the index of wholesale prices. Unfortunately these indexes in the war period do not have their peacetime reliability. Because of changes in quality of goods, reduction in discounts and other services granted with sales, upricing for small extra gadgets, the black markets, and so on, the cost of living index understates the rise of consumers' prices. Neither the cost of living index nor the wholesale price index is likely to measure correctly the price changes in munitions or other war goods.

If, with these assumptions in mind, we put the price level in 1945 as 140 per cent of 1939, then the gross national product in stable dollars rose from $90.4 billions in 1939 to 213/140 = $147 billions in 1945, an increase of some 60 per cent.[1]

Even when deflated the gross national product may not be the best index of war expansion. It reflects the entire stream of goods and services, and does not do justice to the extraordinary expansion in the fields of commodity production most near to the war effort. Other major indexes show this expansion more clearly.

The Industrial Production Index of the Federal Reserve Board rose from 109 in 1939 to 235 in 1944. A total physical production index published in the Economic Reports of the President rose from 109 in 1939 to 201 in 1944. (Both indexes, 1935–1939 = 100.)

Even in agriculture, where rapid increases cannot ordinarily be relied upon, the expansion was remarkable. The aggregate output of 1944 was 30 per cent above the 1935–1939 average, and this despite a slight fall in agricultural employment. Part of the increase was due to a long spell of favorable weather, but better production methods and varieties, increased use of fertilizer, extension of mechanization, together with the stimulus of government planning and price policies were responsible for substantial gains in efficiency.[2]

All this expansion was the more notable considering that the

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[1] Cf. S. Kuznets, "National Product, War and Pre-War," National Bureau of Economic Research, Occasional paper 17, February 1944.

[2] See *Survey of Current Business*, February 1945.

years 1939–1940 were not years of low but years of relatively high production levels.

Three factors made this increase possible: (1) increased employment, including the armed forces; seven millions from the ranks of the unemployed, nine millions largely from young persons, women, and retired workers not normally in the labor market, (2) a longer average work week (43 hours in 1940, 46.7 in 1944), and (3) possibly some increase in the over-all productivity of labor, perhaps 1.5 per cent over the period.

The war production program was made possible by conversion of existing plants to war purposes and by a large program of construction of new plants and facilities. The expenditure for construction came early in the expansion period reaching its peak in 1942, when nearly $22 billion of new plant and equipment were produced, $14 billion of which were financed by the federal government.

The originating and maintaining force behind this expansion was the great increase in federal government purchases of goods and services for war, which grew from $1.25 billion in 1939 to $88.6 billion in 1944. In this latter year, government expenditures in the aggregate amounted to over 45 per cent of the total expenditures of the nation.

Monetary expansion and inflation

All cyclical expansions tend to involve inflation as total available expendable funds tend to increase faster than the output of goods. But war and postwar inflations are of all inflations the most serious.

Theoretically it would be possible to carry on even the great expansion of war time without inflation. If there were unemployed resources, both workers and capital, increased spending by the government might be offset by equivalent increases in aggregate production. We could have both guns and butter. Even at the stage of full employment, when our choice had been reduced to guns or butter, inflation need not arise. If as the output of war goods expands and the output of civilian goods is checked, purchasing power is proportionately shifted from civilians to government, inflation will be restrained. If all the funds needed

for war expansion were collected from the people by means of taxes and bond sales, there would be no over-all increase in purchasing power, and although trouble might arise in isolated parts of the price structure where bottlenecks emerged under pressure of abnormal demands, these could be stopped by allocation of scarce goods to businessmen and rationing of scarce commodities to consumers.

These austere measures, however, are hard to come by. Though personal taxes and sales of war bonds to the public increased greatly during the war, they were not enough to meet the extraordinary expenditures of government. As a result, the government had to obtain a substantial and growing volume of funds from the commercial banks and the Federal Reserve System. In great part, these funds constituted additions to the aggregate purchasing power, and laid the foundations for what could have been a very formidable inflation.

The inflationary force is indicated by total deposits and currency outside banks, which increased from $70 billions in June 1940 to $175 billions in December 1945. Had these increased funds been utilized at the usually increasing rates of turnover that seem to have accompanied business expansions in the past, a most formidable inflation would have resulted. Actually, the rate of turnover of deposits, save in New York City, fell during the war. Turnover of total deposits fell from 13.1 in 1942 to 9.7 in 1945, and of demand deposits from 18.4 in 1942 to 16.1 in 1945.[3] This change of pattern of spending in relation to receipts was presumably not voluntary, but rather the result of the allocations and rationing and price fixing imposed by the government.

Controls

In the absence of controls, the war effort would have been sadly impeded. The government would have been competing with its citizens for the use of resources. Resources would have flowed into whatever area promised the most profit, rather than into those which were most needed for war. In the field of consumption, luxuries would have been produced and consumed while necessities were in inadequate supply. Prices would have risen as they did in the First World War. The cost of the war to the

[3] Source, *Federal Reserve Bulletin.*

government would have been greatly increased. Disputes over the levels of wages, as workers saw both rising profits and rising cost of living (the workers see the profts, the wives see the cost of living), would have been acrid and numerous, and strikes would have greatly interfered with the effective prosecution of the war.

To avoid these difficulties, the government resorted to manifold controls.

Price control began in 1940 with certain selected products in scarce supply. In 1941 the OPA (Office of Price Administration) was established, and in April 1942 the General Maximum Price Regulation was issued, freezing nearly all prices at their March 1942 levels. The principal exceptions to this regulation were farm and food prices. The Stabilization Act of September 1942 directed that prices and wages affecting the cost of living be stabilized at the existing levels, and made it possible to control the price of farm products subject to a floor of parity or the prices of January 1–September 15, 1942, whichever were higher. Further measures in April 1943, under the so-called "hold-the-line" order, rolled prices entering into cost of living back to the level of September 1942, and provided subsidies for producers in areas where the rollback proved inequitable.

Under these various provisions prices were held to what are generally regarded as reasonable levels. Compared with the experience of the First World War, controls in the Second World War showed substantial success. At the end of the First World War, the wholesale price index stood at 195 per cent and the cost of living index at 164, 1913 = 100. At the end of the Second World War (1945) the wholesale price index stood at 140 and the cost of living index (now the index of consumer prices) at 128, 1935–39 = 100. From 1943 to 1945, both indexes were remarkably stable.

Along with price regulation, the government established a system of rationing of consumers' goods and allocation of commodities for producers. It set up a procedure for assisting the movement of labor into the areas where they were needed most, and created the War Labor Board to settle labor disputes. This Board set up formulas for correcting wage rates to allow for changes in the cost of living, and to adjust substandard wages and inequities between workers.

As a result of all these controls, the war ended with the major economic classes of our society—labor, business, and agriculture —not too inequitably sharing in the increased national income. In the broadest way, we had reached an acceptable compromise. The price-wage relation was reasonably appropriate; agricultural prices, which enjoyed the greatest increase, were still not seriously out of line taking into account that they started in 1939 from a relatively low level.[4]

Table 17 compares the distribution of the national income in 1939 and 1945.

TABLE 17. CHANGES IN NATIONAL INCOME BY DISTRIBUTIVE SHARES, 1939–1945*
(Billions of Dollars)

	1939	1945	1945 *levels as per cent of* 1939
Income	72.5	182.8	252
Compensation of employees	47.7	122.9	258
Business and professional income	6.8	16.7	246
Farm income	4.5	13.5	300
†Corporate profits			
before taxes	6.5	20.4	314
after taxes	5.0	8.7	174
Rental incomes	3.5	7.0	200
Net interest	4.2	3.0	73

* Source: Economic Report of the President.

† Corporate profits reached their peak in 1944, being 24.3 before taxes, 10.8 after taxes.

The end of the war

There were many misgivings as to the prospects of the economy at the end of the war. The disruptive effects of demobilization, and of reconversion of industry from war to peace production, and the great expected reduction in government expenditures, all so much more formidable than after the First World War, led many to believe that a serious drop in employment would occur when the war came to an end.

This belief was, apparently, particularly strong in governmental forecasting quarters. The probable level of the gross national product based upon estimated levels of consumption, business in-

[4] S. E. Harris, "Wages and Employment in War and Post War." *Economic Reconstruction* (New York: McGraw-Hill Book Company, Inc., 1945).

vestment, and government expenditures, indicated a volume of unemployment that might reach six million in the last quarter of 1945, and be as high as eight or even eight and one-half million in 1946,[5] and this after allowing for a shrinkage of the labor force below the abnormally high levels of the war. The principal gap in expenditures expected by these forecasters lay in the field of consumption, more particularly, of nondurable goods. Here, basing estimates on projections of past consumption to disposable income, the aggregate expectations fell far short of offsetting the expected reduction of governmental expenditures.

These expectations were not borne out.

The postwar decline that set in early in 1945 and ended early in 1946 was unexpectedly mild. Gross National Product, which reached the peak of $221.6 billions (at annual rates) in the second quarter of 1945, fell to $191.7 billions (at annual rates) in the first quarter of 1946. The Industrial Production Index of the Federal Reserve Board fell from the high level of 235 in 1944 to an average of 160 for the first quarter of 1946 (1935–1939 = 100). The anticipated volume of unemployment failed to arrive. The highest level of unemployment, that of March 1946, did not exceed 2.7 million workers. Thereafter, expansion of output and employment was renewed.

Perhaps it is too early to state that this brief period of contraction should be taken to mark the end of the war cycle. If we follow Burns and Mitchell's timing pattern following the First World War when the cycle was dated as ending in April 1919 (see Table 14) we might tentatively date the end of the war cycle as early 1946. The cycle, then, would begin with the recovery of 1938–1939, swing on into the war expansion with a prolonged and fluctuating peak of 1943–1945, and end in the brief and rapid contraction of 1945 down to early 1946. The Cleveland Trust Company index at its lowest point in this period puts business activity at 6.8 per cent below normal in February 1946, and from then on shows a rapid and substantial expansion.

This cycle from the trough of May 1938 to the trough of February 1946, being nearly eight years long, is one of the longest cycles

[5] See E. E. Hagen, *Output and Demand after the War,* in Post War Economic Studies No. 1, Federal Reserve Board. Also same author, *The Nation's Economic Budget,* in Studies in Income and Wealth, Volume 10, National Bureau of Economic Research.

in the records. It differs from the general run of long cycles in that its length is due to the length of its prosperity rather than the length of its depression.

Postwar expansion and inflation

During the years of expansion that now began, 1946, 1947, and 1948, production reached substantially full employment levels. The pressure of demand for goods, from all quarters, was continuous. Consumers' demand for goods, business demand for plant and equipment, together with government expenditures, which did not fall away as far as had been anticipated, brought the economy to a point where it was operating at maximum employment and maximum capacity in most fields, with not much prospect of further increase save through increased efficiency or improved technology.

There were several factors supporting this high level of expenditure. (1) There was the deferred demand of consumers not only for durable goods such as automobiles and refrigerators, but for nondurable goods not available in adequate quantity during the war. (2) There was the backlog of demand for residential construction, due partly to halting of construction, save in defense areas, during the war, partly to a more than average increase over several years in the rate of marriages. (3) There was a keen business demand for plant and equipment, to meet the growing depreciation of plant pushed during the war, and for modernization purposes. (4) There was a high demand for goods for export to all parts of the world, fortified by lend-lease operations of the government as well as by utilization of other available funds.

At home these demands were backed up by an extraordinary increase in the volume of liquid assets in the possession both of individuals and of business firms, the legacy of the inflationary expenditures of the government during the war. Personal and business holdings of liquid assets, represented by bank deposits, currency, and government securities, stood at $226 billion at the end of 1945, as compared with $70 billions at the close of 1940.[6] This tripling of liquid assets represented to some extent the relatively involuntary savings of the war period, forced on the people by shortages, rationing, price control, and other restraints.

[6] *Current Survey of Business,* February 1946, p. 28.

The combination of deferred demand with abnormally high available purchasing power was the principal background for the expansionary pressure that has marked the postwar period to date. It was also the cause of the substantial rise of prices which, once controls were removed, rapidly came into the picture.

The inflation

The deficit financing of the government, or more particularly, that part thereof that is represented by sales of securities to the banking system, including the Federal Reserve Banks, was inflationary in its nature. It caused the income of the people to increase at a faster rate than the output of goods available for purchase. These are the conditions that make for a general rise in prices; that is to say, inflation. And there is no question that the rise in prices would have been much more substantial in the war period had it not been for the price controls, rationing, and other restrictions imposed by the government. In short, the inflation was repressed.

But repressing inflation does not remove the forces making for inflation. They are still there, ready to burst out if they can. Repression is merely sitting on the lid. Under the lid, at the end of the war, lay the excessive funds that would certainly be released if voluntary patterns of spending could be restored.

Sitting on the lid, once the war was over, became politically unpopular. Price control began to break down, and by the middle of 1946, when the legal powers of the OPA were to expire, the general climate of opinion was distinctly unfavorable to the continuance of effective price control. One need not go into the elaborate backing and filling that marked the end of price control. Suffice it to say that it came to an end before the year was out.

The lid being off, the repressed forces of inflation broke through, and just as in the months following the end of the First World War, a rapid rise in prices took place. The consumers' price index, which in June 1946 stood at 133 (1935–1939 = 100), rose to 153.3 in January 1947, 168.8 in January 1948, and stood at 174.5 in September 1948. The rise of 40 points in this brief time compares with the rise of the cost of living index from 164 in December 1918 to 207.7 in June 1920 (1914 = 100).

The underlying causes of the inflation lay in the pent-up de-

mands of the people and their possession of large reservoirs of liquid funds, but other factors assisted in the process. The pressure for reduction of taxes to which government gave way added to the available resources of the people. The successive rounds of wage increases, demanded to meet the rising cost of living, added to the incomes of large sections of the people, and by increasing the pressure on the prices entering into the cost of living, defeated their own purpose, and laid the ground for further wage demands, and so on, in spiral fashion. The expansion of construction, both residential and other, put funds in the hands of workers without adding to currently available output, as did also the production of that part of output which went to fill up the relatively depleted stocks of inventories and bring them closer to prewar proportions.

Furthermore, the pressure of production on the capacity of the existing plant was presumably causing many firms to enter the area of rising marginal costs, costs that were further increased by the rising level of wage rates. Thus, as in other periods of expansion, increases in output, which in 1946 were popularly supposed to bring about a fall in the level prices (indeed this expectation was one of the strongest arguments advanced in business circles for the end of controls), were in fact accompanied by rising prices, to the acute disappointment of the prophets.

Are we to have a postwar depression?

Thus there has emerged in the postwar period a pattern of economic behavior in many ways similar but to some degree remarkably different from the pattern that followed the First World War.

As in 1919–1920 the nation experienced a postwar "boom." And it was based, as was the earlier one, on the foundation of deferred demand from both consumers and business, large export surplus financed to a considerable degree by gift or loan, a substantial increase in inventories, all fortified by a considerable backlog of liquid assets derived from war finance.

This similarity of pattern gave rise to the overhanging fear that a primary postwar depression, like that of 1920–1921, could not be indefinitely postponed. The rise in prices with its discouragement to buying, the inevitable slowing up of inventory accumulation and demand for plant and equipment as the most important needs of business are filled; the uncertainty of an export surplus

based to a substantial degree on aid to foreign countries; all these aspects of the expansion resembled those ruling in 1919–1920, and occasioned misgivings lest they foreshadow a similar ending.

It is true, the expansion shows considerable differences from the expansion that immediately followed the First World War. The lessons of the past instilled a spirit of caution, almost of pessimism, among businessmen. The outward sign of this attitude was the refusal of the stock market to reflect adequately the inflated levels of postwar profits. This factor makes for a powerful brake on enthusiasm and speculative excess.

More tangible, perhaps, is the different monetary situation from that of 1920. In 1920 severe pressure affected the banking system. The banks as a whole were in debt to the Federal Reserve Banks, and the Federal Reserve Banks themselves had reached about the limit of their lending capacity and were steadily raising their rates of rediscount. Rates stood at 6 per cent for all banks in February 1920 and for four of them at 7 per cent in June 1920. Rates charged by commercial banks rose to 7 per cent in the winter of 1920–1921.

Since the second war, the situation has been quite different. The banking system is well fortified with reserve funds, not only actually but potentially through the readiness of the Federal Reserve Banks to purchase United States securities in order to maintain their prices. Discounts and advances of the Federal Reserve Banks have been of negligible volume. Interest rates have been low and prevented from serious rise by the Treasury policy of maintaining the prices of United States securities. The Federal Reserve Banks themselves have been far from the limits of their loaning capacity. Reserves against combined deposit and Federal Reserve note liabilities have been running at the level of 48 per cent, nearly double the present legal requirements.

In fact, the monetary situation caused the government considerable concern over the possibility of further inflation, and moved it to seek higher reserve requirements of the banks (raised some four percentage points by the legislation of August 1948) and even to propose "special reserves" in addition to the regular reserve requirements in order to neutralize the large cashable bond holdings of member banks. Thus the intense pressure on the money market which emerged in 1920 was not a factor in 1946–1948.

Whether, as a result of the net impact of all these factors the pattern of other postwar periods will once more emerge, is a matter of speculation. Perhaps the country has been waiting for a primary postwar depression that is failing to arrive. It is possible that the economy may have skipped this phase of the pattern and gone immediately into the postwar expansion based on the tremendous backlog of demand in consumption and investment fields alike. If this is the case, then those who think in terms of past patterns would expect a major postwar depression to arrive after the favorable developments have run their course. This would mean that unless effective stabilizing measures are devised, a great depression might be expected to emerge midway in the next decade.

But, in any event, some receding from the continued high levels of 1947–1948 would seem to be unavoidable. The first half of 1949 saw the economy moving to somewhat lower levels. The price level had reached its peak in August–September 1948, industrial production in October 1948, and personal incomes in the last quarter of 1948. Unemployment reached its lowest point for 1948 in October. Whether this is a cyclical turning point, marking the end of the reconversion cycle that began in 1946, only time can tell.

Suggested Readings on Part I

A. F. Burns and W. C. Mitchell, *Measuring Business Cycles* (New York: National Bureau of Economic Research, 1943). An extensive critical study of methods of measuring cyclical behavior in business cycles and in many specific cycles.

L. P. Ayres, *Turning Points in Business Cycles* (New York: The Macmillan Co., 1939). An explanation of the forces which appear to cause the downturns and upturns in business cycles in the United States, 1831–1939.

J. M. Clark, *Strategic Factors in Business Cycles* (New York: National Bureau of Economic Research, 1934), especially Part II. Typical cycle patterns. A readable study based on researches of the National Bureau of Economic Research.

Edwin Frickey, *Economic Fluctuations in the United States* (Cambridge: Harvard University Press, 1942). A systematic analysis of long-run trends and business cycles, 1866–1914.

W. C. Mitchell, *Business Cycles, The Problem and Its Setting* (New York: National Bureau of Economic Research, 1927). One of the most important works on business cycles in modern times, and the

most valuable source for a factual description of cyclical behavior. Chapters III and IV give an admirable and detailed account of the problem of measuring and describing the cycle.

W. M. Persons, *Forecasting Business Cycles* (New York: John Wiley & Sons, 1931). This book contains a useful and learned historical and statistical analysis of cycles in the United States since 1870.

J. A. Schumpeter, *Business Cycles* (New York: McGraw-Hill Book Co., 1939). Chapters VI and VII of this great work contain a detailed study of long waves of activity from 1787 to 1913. Chapters XIV and XV carry this study from 1919 up to 1938.

Carl Snyder, *Business Cycles and Business Measurements* (New York: The Macmillan Company, 1927). Excellent statistical studies of growth and cyclical fluctuation by a well-known statistician and economist.

W. L. Thorp, *Business Annals* (New York: National Bureau of Economic Research, 1926). Here are the detailed accounts of business behavior that give the background for much of our knowledge of cycles since the early nineteenth century.

E. Wagemann, *Economic Rhythm* (New York: McGraw-Hill Book Co., 1930). Brief and useful studies based on German researches in measurement and description before 1929.

Part II

Theories of the Cycle

INTRODUCTION

OUR SURVEY OF BUSINESS cycle behavior, as set forth in the first part of the book, shows how many processes are involved in the ebb and flow of activity that constitutes cycles. Originating forces impinging on the operations of business, responses of business conditioned by the framework of our economic institutions, variations in confidence and despair, increase and decrease of money in use, correlative rise and fall of the price level, changes in the distribution of income among the economic classes, changes in the ways in which, under the impact of prosperity or depression, people spend or invest their income—all these multitudinous factors are at work in determining business cycle behavior.

Of these and other factors at work, which are the essential causes of cyclical fluctuation? The answer to this question is the task of cycle theory; and to the exposition of the various answers that may be given, this part of the book is devoted.

Because of the complexity of the forces involved, the possible explanations are somewhat numerous. By the concentration of emphasis on one factor, several apparently satisfactory, but to some degree conflicting, explanations can be evolved. We will develop at length the most important of these explanations in the chapters that follow.

To facilitate this task, the explanations have been arranged under the following classification:

1. Real causes.
2. Psychological causes.
3. Monetary causes.
4. Causes associated with variations in saving and spending.

Real causes are changes in actual economic conditions, such as a new method of production or a change in consumer's desire for goods.

Robertson[1] classifies real causes of change as follows: (1) changes in real costs, such as, for example, technological changes; (2) changes in real demand, such as the large increase in derived demand for plant sometimes occasioned by a smaller increase in demand for consumers' goods; and (3) changes in real demand prices —that is, changes in the amount of goods a given group would be willing to offer for the goods of another group, such as would be brought about, for example, by substantial changes in agricultural output.

This classification is followed in the first three chapters of Part II: Chapter 8, Innovation; Chapter 9, The Principle of Acceleration; and Chapter 10, Agriculture and the Business Cycle.

Psychological causes arise from changes in men's attitude of mind toward actual economic conditions. They are discussed in Chapter 11.

Monetary causes originate in variations in the total money supply. They may work through changes in effective demand, as taken up in Chapter 12, "Monetary Theory of the Cycle"; or they may work through changes in the rates of interest and their effect on the output of producers' goods, as shown in Chapter 13, "Monetary Overinvestment and the Structure of Production."

Causes associated with variations in saving and spending are treated in Chapters 14, 15, and 16. The first of these is devoted to "Underconsumption Theories," which find the cause of cycles in excessive saving and its correlative underconsumption. Chapter 15 takes up the relations of saving and investment. Chapter 16 gives an account of the theories of J. M. Keynes, who corrects and extends the simpler underconsumption theories and brings them into their proper relation with the operation of monetary factors and the price levels.

This part of the book ends with a brief appraisal of the current status of business cycle theory (Chapter 17).

[1] D. H. Robertson, *Banking Policy and the Price Level,* Revised Edition (London: P. S. King & Co., 1932), Chapter II.

8

INNOVATION

THE THEORIES EXAMINED in this chapter are based on the proposition that business cycles are inherent in the capitalistic process, and that their explanation must be found in the characteristics *par excellence* of modern capitalism.

Of all the features of capitalism the most striking and characteristic is economic change. Capitalism has never been static. It is a dynamic system, which by a never-ending process of innovation, is continuously changing its methods of production and its pattern of consumption. This process of change is its distinguishing characteristic, and it is this process that, as seen in the theories developed in this chapter, brings about the cyclical fluctuations everywhere associated with the capitalistic economy.

Two examples of this type of theory follow. The first is Schumpeter's theory of innovation. The second is Cassel's overinvestment theory. Both theories find the source of cycles in the consequences of innovation and progress. Both regard cycles as therefore inherent in the capitalistic process. They differ, however, in the description of the process set in motion by the impact of progress, and particularly in their analysis of the reasons why periods of expansion come to an end.

SCHUMPETER'S THEORY OF INNOVATION

The possibility that technological change, the most characteristic aspect of a competitive capitalistic society, may be the efficient cause of cyclical fluctuation has found its most renowned expression in the works of Joseph Schumpeter. His theories, which may be found in his earlier work, *The Theory of Economic De-*

velopment (original German edition, 1911, English Translation 1934), and in his recent monumental treatise, *Business Cycles* (1939), may be taken as representative of all those that run in terms of invention, innovation, and technological change.[1]

We now follow Schumpeter's account of the cycle.

In an economic system, not subject to changes in methods of production, and with a stable money supply, business cycles would not and could not exist. Such a system, which is essentially a static state, could be disturbed from time to time by external factors, such as wars, or legislation, or crop variations due to nature. But such disturbances do not seem to lend themselves to explanation of the relatively rhythmic cyclical process, and Schumpeter disregards them in his analysis. Even continuous changes, such as the gradual increase of population or capital, what Schumpeter calls "growth," would not cause progressive disequilibrium, for these changes, too, would be absorbed in the succession of small adjustments by which economic equilibrium is maintained. The resulting economic system, innovations being absent, would be a "stationary flow," repeating itself continuously in a substantially invariable pattern. The community lives and works in an unchanging economic environment. Consumer tastes and demands, producer's methods of production are unchanging. Equipment is replaced, but not expanded. There is no net saving. It is a static economic state.

Our economy is not static; it is dynamic. Its dynamic quality resides in the operations of the entrepreneur, whose typical function is not mere management, or the receipt of windfall profits or losses, or the assumption of risk, but the creation of the new: new ways of doing things, new commodities and services, new markets. It is his innovations, his technological or marketing novelties, that are the dynamic factor in economic life. They set in motion forces that prevail over the adapting process characteristic of equilibrium, and in so doing they create cumulative increases in activity such as characterize booms.

[1] For a brief statement of his theory, see "The Explanation of the Business Cycle," *Economica*, December 1927. A summary of his ideas is found in H. S. Ellis, *German Monetary Theory* (Cambridge: Harvard University Press, 1937), Chapter XVIII. In *Business Cycles* (New York: McGraw-Hill Book Company, Inc., 1939), see Chaps. III and IV. See also his paper, "The Analysis of Economic Change" in *Review of Economic Statistics*, May 1935; reprinted in *Readings in Business Cycle Theory* (Philadelphia: Blakiston Company, 1944).

These innovations[2] involve not merely a new and lower cost curve, but also a new arrangement of the factors of production. They involve the setting up of new "production functions." They combine the factors of production in a new way. Furthermore, they improve the expectations of the entrepreneur and lead him, in order to take advantage of the situation, to demand extensive new productive equipment.

How innovations disturb equilibrium

Schumpeter finds it convenient to assume that the economic system is in a state of equilibrium in such wise that all factors of production are fully employed and entrepreneurs, in the aggregate, are making zero profits. This situation is not to be found in real life, but it is a convenient starting place from which to describe the wavelike fluctuation of the business cycle.

Whether cyclical fluctuations are caused by outside factors or by a process of change generated by the economic system itself, they consist in a series of responses that can best be described as departures from equilibrium. The state of equilibrium serves as a point of reference, by which we can measure the degree of deviation involved in cyclical behavior. Common sense and ordinary business experience recognize that economic values fluctuate between levels that are "high" and those that are "low." Somewhere between lie values that are neither "high" nor "low," but, as we say, "normal." This is the popular concept to which the more precise concept of equilibrium corresponds.

The effect of innovations is to disturb the equilibrium, cause entrepreneurs to expand their activities, and particularly to set up a cumulative demand for productive equipment that has far-reaching effects. Technological innovations carry with them an enlarged demand for capital. Investment must be carried on extensively, to some extent in additional working capital, but mostly in the relatively permanent forms, such as new equipment, new construction, and so forth.

But mere increase in investment by a few innovators, even

[2] Innovations are to be distinguished from inventions. Invention is the discovery of scientific novelties. Innovation is carrying these inventions into actual performance, or, in common terms, "exploiting" them. Invention is probably much less fluctuating than innovation. It is innovation that is subject to cycles, not invention.

though they are of considerable importance, would hardly be sufficient to bring about a "boom." And if the innovations were so equally distributed over time as to be merely a factor of growth, they would not strain the adaptive process of the economic system. In reality, technological change is likely to increase aggregate investment greatly and in a short period of time. Innovations are not spread out in time; they come in waves. Most businessmen are too conservative for the spontaneous adoption of innovations. New methods are risky, disturbing, and instinctively resisted. The old routine is easy; the workers, the customers, the money lenders all like it. But once an innovation is started and the trade sees it done and its problems solved, their natural resistances are more readily overcome. The innovation attracts imitators, first a few, then more, then the crowd. The innovation is copied, imitated by some, and forced by competition on others. This factor of imitation makes what otherwise would have been the daring innovations of those who have the imagination or the courage to pioneer, into a wave of progress and improvement that gains momentum continuously.

This wave of expansion is financed by borrowing from the banks. In a static economy, funds are fixed. What innovators and their followers get hold of must be relinquished by someone else. In a dynamic economy, the banks are ready to increase the total supply of credit and to put it into the hands of those whose prospects from innovations promise ability to pay interest. When the innovators obtain their credit, they are in position to draw productive resources away from those not so fortunate, not by getting away their funds, but by outbidding them in price. Thus a rise of prices begins and continues until enough means of production have been wrung from others to satisfy the demands of the innovators at the new level of prices.

These are conditions that make for cyclical expansion. The additional expenditures of entrepreneurs will add to the receipts of the producers of capital goods. The rising wages of working people will increase the demand for consumers' goods, and as the output of consumers' goods will temporarily fall, with resources being drawn into the production of capital equipment, their prices must rise. Hence profits will emerge over the system as a whole,

not only for the new firms that may have arisen to exploit the innovation, but for the aggregate of old firms too.

If one drops the assumption of full employment at equilibrium and allows some elasticity in the aggregate supply of means of production, the analysis will not be materially changed. Total output can now be increased, expansion of capital goods is not necessarily at the expense of output of consumers' goods, and neither the price level in general nor the earnings rates of the factors of production need rise. But there will be an increase in aggregate wage payments, and pressure on consumers' goods will emerge with probable rise in their prices, and of all prices where bottlenecks of output occur (i.e., where supply is temporarily inelastic). Under these circumstances the expansion will proceed in much the same pattern as we have outlined.

Why the expansion ends

The upward swing started by innovation cannot be maintained. The forces that it sets in motion carry with them the seeds of their own decay. In due time, the innovation will substantially increase the output of consumers' goods, and when these goods emerge upon the scene, the period of expansion will be checked. This expansion depends upon the length of time taken to build and install productive equipment—that is to say, upon the length of the "period of gestation." During this period of time, the efforts of society will be diverted temporarily from the production of consumers' goods, in order that the means for producing goods in the future can be enlarged. When the period of gestation is over, the output of consumers' goods will be enlarged once more, and, because of the innovation, to a level above that which ruled before. The work is done; the consequences of an innovation are here; the expansion is checked; prosperity comes to an end.

Indeed, it must come to an end, for the ending of expansion is not merely a cessation of supernormal activity. It involves more than this. It involves the necessity of adapting economic society to the new levels of costs and prices and the new methods of production installed by the innovators. This adaptation is a painful process that overstrains the adaptive process of economic society. The powers of absorption that can take care of a multitude of small

disturbances cannot cope quickly with the effects of innovation, for innovations have the most painful consequences for many firms. The innovator is a powerful competitor who, once his output is ready, forces rough changes on his less gifted rivals. He compels them to reconstruct and modernize their plants. He may cause them to lose their markets, go through the painful process of restriction, and even suffer economic death. These acts are not quickly done, and while they are being done, the disequilibrium engendered causes—indeed, takes the form of—a depression.

Were further innovations proceeding, the disequilibrium arising from the earlier ones might be overweighed by the further expansion of activities set up, but this is not likely to happen. Indeed, entrepreneurial activity on any supernormal level must eventually slacken, for two reasons. (1) In the first place, even though the fall in prices consequent to an increase of output has been taken into account in the plans of the innovators, still as output increases and pressure on the factors of production becomes intense, many costs must rise, and a position will be reached where costs and prices once more are equal, profits are eliminated, and further impulse to expansion is removed. (2) In the second place, the upset in normal relations consequent to the innovation, especially after the new or additional products begin to come on the market, introduces such confusion and fluctuation in values that planning becomes more difficult and failure more of a risk. This outcome tends to discourage additional innovation until such time as things settle down and thus removes the only force that might overcome, even if temporarily, the onset of depression.

Once entrepreneurs cease to expand, the forces of disequilibrium are bound to have their way. If entrepreneurs, even of the innovating type, moved by the increasing risks of the time, reduce their activities and pay off their bank loans (what Schumpeter calls "auto-deflation"), the effects on total purchasing power are serious and the depression takes on considerable virulence.

Progress is fluctuation

Thus the process of innovation, as Schumpeter sees it, brings about a change in economic activity that takes the form of the familiar pattern of expansion and contraction characteristic of cycles. We expand while innovations are being put into effect;

we contract while society is adapting itself to the changes these innovations demand. Progress is not a smooth line; it expresses itself in a cyclical process. There is no conflict between progress and fluctuation. Progress *is* fluctuation. Doubtless in a different society it might take a different form. Progress might be steady rather than in spurts. But in the particular institutional setting of capitalism, with private property and private initiative (even the collective initiative of great corporations), characterized by the spirit of progress, innovation seems certain to move in a cyclical form. Innovation engenders booms, and booms are followed by depression. Indeed, booms are the cause of depression, and depression will continue until the readjustments required by innovation are reasonably carried through, as they are bound to be. Right relations between costs and prices are restored; the weaklings are weeded out; and business is adjusted to the new economic data. This painful process of adaptation eventually brings a new equilibrium in which the economic system is once more at rest, but with a greater product, new production functions, new price relations, lower prices, and, in the aggregate, zero profits. So the stage is set for a new wave of innovations, and when this wave occurs, another boom is on the way.

Innovations, indeed, are bound to enter into the picture at this very stage, partly because innovation is a continuous impulse in our dynamic society interrupted only by those periods of adaptation which we call "depressions," and partly because depression itself brings about a further impulse to innovation. Not only do the hardships of depression cause more active search for the means of reducing costs, but the reduction of interest rates characteristic of depression makes inventions exploitable that would otherwise have had to lie dormant.

Thus it is that innovation revives and a new cycle of expansion and contraction enters the scene.

Complicating factors

The simple expansion-contraction process just described is, however, commonly complicated by other factors. The business expansion carries along with it much speculative activity based on optimistic assumptions regarding the continuance of current rates of change. People act as if rising output and the rising prices

made possible by bank credit expansion are to continue indefinitely. A "secondary expansion" is set up, which becomes so conspicuous as to be taken for the real cause and hides the less obvious but fundamental motive force of innovation. All the usual errors of optimism take place with its accompaniment of great borrowing not justified by productive advantage. One need not repeat the familiar picture.

On the downward swing, the crumbling of the structure, particularly in its state of unjustified enlargement, induces a liquidation and a readjustment more formidable than that needed merely to produce the new equilibrium appropriate to the innovation. In this "secondary contraction," pessimism and the various elements of the vicious spiral of deflation do much damage. This period is what Schumpeter calls "abnormal liquidation."

Because of these secondary factors, what would otherwise be a process of expansion and contraction (or, if one likes, prosperity and recession) has added to it a period of depression and revival, thus making the four phases characteristic of cycles as commonly experienced.

To repeat, then, booms and depressions turn out to be, on examination, the way in which a progressive society adapts itself to technological change. It seems a strange kind of adaptation and a halting sort of progress: two steps ahead, one step back. In Schumpeter's mind, this is the price we have to pay for progress. Possibly there is no avoiding the price. It is conceivable that careful banking policy could make the process more smooth. Without credit expansion, the plans of innovators and the expansion they engender could not be carried through. Unfortunately, although this might eliminate the boom and with it the subsequent depression, it might eliminate the progress too. We do not want to forego the boon of progress. Furthermore, it may well be beyond the art of banks to devise just that precise combination of aid and restraint that would give us progress without the price we now pay for it and make innovation continuous rather than a succession of spurts.

Simultaneous cycles

As we have seen in Chapter 1, cycles are not all of the same length. There are minor cycles (3½ years), major or Juglar cy-

cles (9–10 years), and long waves or Kondratieff cycles (50–60 years). Schumpeter finds innovation to be the moving force in all these cycles.

It is not to be expected that innovations would cause cycles of a single wavelike movement. The period of gestation and absorption of the effects of innovations are not the same for all innovations. Some innovations will run their course quickly; others need time to work out their full effects. Railroads are of the latter type. Not all the railroads can be built at once. The railroads, like all major innovations, need time to shape their environment for their own further development. And it takes time too to bring into use the opportunities of production that the railroads make possible, and all the shifts of population and enterprise that such great innovations set going.

Thus some innovations make for short cycles. Others work out in cycles of the Juglar type. In still others, the process is extended over the long period of the Kondratieff cycle, exemplified by the Industrial Revolution from the late eighteenth century to 1842, railroadization from 1842 to 1897, and the age of electricity, chemistry, and motors from 1898 on.

All these cycles, short and long, go on in simultaneous waves, and all are part of the same process of economic evolution. Innovations are the common cause of them all.

Cassel's Overinvestment Theory

Among the theorists who find in the forces of progress the moving cause of cycle is the Swedish economist, Gustav Cassel. Like Schumpeter, he traces the successive periods of expansion to the dynamic forces of change in our capitalistic society; but whereas Schumpeter traces the crises that always follow expansion to the dislocation of price relations caused by the ending of the period of gestation when the results of innovation are ready for the market, Cassel attributes the end of expansion to excessive investment outrunning the available supplies of capital.

Let us examine his theory in detail.[3]

According to Cassel, cycles or, to use his own term, *conjunctures* are essentially the result of the forces of progress. These

[3] G. Cassel, *Theory of Social Economy* (New York: Harcourt, Brace & Company, Inc., 1923), Book IV, especially Chap. XIX.

forces include not only technical progress as such (although this is the chief force) but also the opening up of new countries and the growth of population (which must be included in progress in the economic sense). Such progress in itself is bound to be uneven rather than regular, and from this arises the stimulus to those bursts of activity that constitute recognizable periods of prosperity. Every innovation or discovery is a new opportunity to use fixed capital profitably on a large scale. At all times, many such opportunities are just awaiting the profitable exploitation possible when progress has lowered their cost relatively to the existing rate of interest. When this arises, an extraordinary extension in the production of fixed capital occurs, constituting a new "high conjuncture."

One might suppose that this "high conjuncture," when the immediate impulse that caused it has disappeared, would pass gradually into a period of more moderate activity, but actually this is not the case. Commonly expansion ends abruptly, often in a catastrophe which we call "a crisis" and to the accompaniment of great losses, many bankruptcies, and destruction of confidence in general. Something must have gone wrong with the calculations of the entrepreneurs to create such a situation.

The supply of savings overestimated

What, now, is the mistake which they made? It is not overproduction, which means they had overestimated the demands of the consumer. There is no evidence that this is the case; indeed, quite the opposite. The services of fixed capital have to be used to the utmost, even in the last part of a period of expansion, to meet the demand of consumption. So great is the demand that the materials used in the production of fixed capital, such, for example, as iron and steel, become unmistakably scarce and command high prices right up to the crisis and even beyond. No—what is overestimated is *not* the demands of consumers or the need of the community for the services of fixed capital, but rather the supply of capital, or, going back of this, the amount of savings available for taking over the supply of fixed real capital which is being produced. What is overestimated is the community's capacity to save. If there is overproduction, it is overproduction

relative to the volume of saving, not relative to the volume of consumption.

The great volume of fixed capital which is produced in "high conjuncture" is clearly dependent on the willingness of the community to allow resources to be devoted to this kind of production for the future, a willingness expressed in the supply of savings and measured at any time by the prevailing rates of interest. The rate of interest is of crucial importance, for it is the only means the entrepreneurs have of judging the condition of the capital market. The rates of interest at the beginning of a period of high conjuncture are relatively low, since the opportunities which give the expansion its start offer more than usual prospects of return. Hence enterprises may be planned, and planned in large volume, which can be profitable only if interest rates continue on or near their existing level. As many of these enterprises, such as houses, industrial buildings, railroads, and so on, may not be completed for some time and so delay their full demand on the savings of the community, wrong estimates of the state of savings may easily be made. It must be realized that, although the process of producing fixed capital may be financed by the relatively expansible means of bank credit, where loans for pay rolls and purchase of materials are customary transactions, this cannot be done so easily when the fixed capital is ready for sale and has to be paid for by those who have ordered installation. This kind of payment is not commonly financed by bank loans; rather, it calls for the issue of securities which can be sold only in the market for the effective savings of the community.

The crisis due to undersaving

The process of expansion sharply limits the growth of savings, more particularly by the relative rise of wages over profits which distinguishes the later months of a boom. Of all the classes of society, profit-makers tend to save the most; wage earners, the least. At the beginning of a period of expansion, when profits are still high, saving and the formation of capital are at their highest. But the scarcity of labor characteristic of prosperity raises wages gradually at the expense of profit (which may be pinched also by the rise in the prices of scarce materials), and, as this happens,

the level of savings becomes relatively inadequate. The greatest savers find their incomes pinched; the wage earners who now belatedly gain increase their consumption. Even though the volume of savings does not fall, it may cease to rise and may become inadequate for the increasing needs of the business world.

The first expression of this condition appears in the rising rate of interest, which in itself is a source of trouble, since it brings about a falling price for instruments of production, the income of which now has to be capitalized at a higher rate. Producers of such instruments may, therefore, be disappointed in their sales price. The real extent of the difficulty tends to emerge only when a large volume of such instruments, including construction, is now completed. It is this event that causes the peak of demand for capital to carry out the necessary payments, and it is this necessity that makes the greatest stringency in the capital market. The evidence of capital shortage now becomes unmistakable. Producers of capital goods may have great difficulty in selling them. They may have difficulty even in financing their current costs of production, and thus will emerge a general inability to complete undertakings that are already begun—so much so, that some will be abandoned at great loss.

To some extent, these difficulties had been hidden by the ability of the banking system to expand its currency. But when the emergence of serious trouble, the fall in the price of capital goods, and the abandonment of enterprises begin to react on the willingness of the banks to advance funds, then the veil is finally torn away, the real scarcity of capital becomes painfully apparent, and the prosperity comes to its all-too-familiar end.

Thus the essential cause of crisis is to be found in the capital market. We save too little; we spend too much. Where the underconsumptionists find the collapse in too much saving,[4] Cassel finds it in too little. We set a pace in the production of fixed capital that we cannot maintain, not because of overproduction of goods, but because of undersupply of savings. Monetary theorists, as we shall see, find the origin of this excessive pace in the illusions set up by the elastic currency of our banking system. Cassel finds it in the forces of progress inherent in our way of life. The monetary theorist would remove fluctuations from our eco-

[4] See Chapter 14.

nomic order by proper arrangements of the supply of money. Cassel, like Schumpeter, sees no way of reducing our cyclical instability save by curbing the factors of progress to which we owe the welfare of our modern world. If progress and change come to an end in a relatively static society, then economic conjunctures will tend to disappear. As long as we have progress, we will have cycles too. Even a socialist community, as long as it hoped to progress, would have cycles, for they are not, as such, inherent in a particular form of economic society.[5]

Spiethoff's theory

Cassel's theory has been taken as representative of what Haberler calls the nonmonetary overinvestment theories. Some might have preferred Arthur Spiethoff, whose influence in cyclical theory, especially in Germany, has been great. Like Cassel, he puts much stress on the great output of fixed capital as the source of expansion and on the overproduction of this real capital as the real cause of crises. He tends to be remembered largely for his theory that the crisis arises from disproportionality in the supply of goods, whereby, although producers' goods are plentiful, labor-power and the means of subsistence for workers become relatively scarce. This scarcity is disguised in a monetary economy as a shortage of loan capital and leads sometimes to the hope that an increase of bank credit will relieve the situation. The real trouble, which no increase of credit can remove, is a shortage of certain complementary goods without which the great supply of fixed capital becomes unworkable. Thus overproduction and underproduction exist side by side. As the result is to bring about a great fall in the demand for fixed capital and a corresponding reduction in employment and incomes, overproduction spreads from its original field and becomes general throughout the whole economy.[6]

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[5] G. Cassel, *Theory of Social Economy*, p. 624.

[6] See Spiethoff's article "Krisen" in *Handwörterbuch des Staatswissenschaften*, 4th Edition (Jena: Gustav Fischer, 1925) Vol. VI, 70–86. There is a summary of Spiethoff's analysis in G. von Haberler's *Prosperity and Depression*, 3rd Edition (Geneva: League of Nations, 1941), Chapter 3, B.

9

REAL CAUSES: THE PRINCIPLE OF ACCELERATION

IT IS A MATTER of common observation that the production of producers' goods fluctuates more violently than the production of consumers' goods. This difference may be accounted for in a number of possible ways, as will be seen later. One of the most interesting of these explanations is often called "the principle of intensified fluctuations of derived demand," or more simply, "the principle of acceleration."

As the principle of acceleration is most commonly stated, changes in the demand for consumers' goods and services tend to cause much greater changes in the demand for the capital goods used in their production. This principle can be broadened to state that given changes in consumption expenditures will induce greater changes in investment expenditures. Using this broader conception, we may distinguish three cases of this principle according as the change in investment is in (1) producers' goods, (2) durable consumption goods, (3) inventories or commodity stocks.[1]

DURABLE PRODUCERS' GOODS

Suppose 1,000 units of consumers' goods are produced in a given period with the aid of 500 units of equipment, such equipment wearing out in 10 periods—that is, being subject to a 10 per cent rate of depreciation. Then the demand for machinery under this situation, assuming no change in methods and no increase of the

[1] G. von Haberler, *Prosperity and Depression* (Geneva: League of Nations, 1941), p. 83.

demand for goods, is entirely for *replacement* and consists of 10 per cent of the equipment units per period—that is, 50 units. If, now, a 10 per cent increase of demand for the products takes place, then, again assuming no change in methods of production, an increase in equipment of 10 per cent, or 50 units, will be necessary. Hence to the *replacement* demand of 50 units is added a *new* demand of 50 more, a total of 100 units. The result is that an increase of 10 per cent in demand for the product causes the demand for the equipment to increase 100 per cent.

Furthermore, the degree of this magnification of derived de-

Commodity Demand	*Equipment Replacement Demand*	*New Equipment Demand*	*Total Equipment Demand*
	(1) Equipment lasts 10 periods		
1,000	50	0	50
1,100	50	50	100 = Increase 100%
	(2) Equipment lasts 20 periods		
1,000	25	0	25
1,100	25	50	75 = Increase 200%
	(3) Equipment lasts 5 periods		
1,000	100	0	100
1,100	100	50	150 = Increase 50%
	(4) Equipment lasts 1 period		
1,000	500	0	500
1,100	500	50	550 = Increase 10%

mand is directly dependent on the durability of the equipment. If, in the previous illustration, the equipment lasted, on the average, 20 periods, then only 25 would need to be replaced each period, and in equilibrium this constitutes the normal demand. But a 10 per cent increase of demand for products in this case will add a demand for 50 new units of equipment, increasing the demand from 25 to 75. Thus a 10 per cent increase in commodity demand causes a 200 per cent increase in equipment demand.

On the other hand, if the equipment lasted only five periods, making the normal replacement demand 100, then an addition to the commodity demand of 10 per cent would raise the equipment demand from 100 to 150, a 50 per cent increase. Finally, if the

equipment lasted only one period and had to be replaced each time an output was produced (such as coal), then the normal replacement demand in our illustration would be 500. A 10 per cent increase of commodity demand would raise the equipment from 500 to 550, a 10 per cent increase, and precisely equivalent.

The table on page 171 shows this in simple form.

Derived demand decreases sooner than expected. The downward fluctuation of derived demand has a particular interest, for it begins while the demand for the products is still increasing, provided only that the *rate* of increase is beginning to fall.

Thus, in our original illustration, we have seen that an increase of 10 per cent in commodity demand increases derived demand by 100 per cent. Let us now see what happens if demand increases more slowly and finally ceases to increase, although it does not fall. The following table shows what occurs:

	Commodity Demand	*Equipment Replacement Demand*	*New Equipment Demand*	*Total Equipment Demand*
Normal	1,000	50	0	50
10% increase	1,100	50	50	100
5% increase	1,150	50	25	75
No increase	1,150	50	0	50
Decrease	750	0	0	0

Thus, as soon as the rate of increase slackens, the absolute demand for equipment begins to fall; and when demand has ceased to grow, the demand for equipment has returned to its original position. This statement has to be modified slightly from consideration of the fact that the replacement demand of 10 per cent of equipment will (in due time) rise to 57 (equipment now in use is 575 units). But this increase will take place only when the present new machines begin to need replacing—that is to say, 10 periods after the increase of equipment begins to take place. Such an increase, small in any case, and particularly small if spread out over the period, may be neglected as having no importance in cyclical expansions and contractions.

Now, if demand for the commodity begins actually to fall, as is the case in recessions, and furthermore to fall below its ordinary level (1,000 units in our illustrations), at the best we cannot ex-

pect the demand in the equipment industry to be higher than 50 (as there are no new units wanted); but it may be that the general feeling of overcapacity in the business will cause business buyers to refrain from replacements (especially if they can more advantageously use the replacement reserves for wages or, even more probably, for dividends) and to reduce the demand below the normal level of 50. If they made no replacements whatever, the demand for equipment would disappear and become zero.

Thus it is possible that the demand for equipment will rise from its normal rate of 50 to a boom rate of 100, falling to 75 when demand is still increasing, and going down even to zero if demand falls much below its ordinary level. Such a situation might come about in the production of locomotives, which in a good year will rise to astonishingly high figures, but in a bad year sink almost to nothing—a range of output quite disproportionate to the change in demand for transportation.

Durable Consumers' Goods

Houses, automobiles, furniture, and all other articles that have a relatively long life (relative to the flow of services which they render) exhibit this principle in the field of consumers' goods. A stock of houses, rendering a given amount of service, involves some regular replacement demand, in such wise that in normal conditions, even if no new demand is arising, a regular amount of house building is going on. If demand for house space arises, the same magnification of demand for houses will take place. If the depreciation rate of houses is 5 per cent per annum (houses lasting 20 years), then an increase of 10 per cent in demand for accommodation will increase house building by 200 per cent. (For every 1,000 houses, 50 will be being replaced, and to this must be added 100 more, raising the total to 150 for every 1,000 now in use.)

The case of automobiles is similar. Suppose that cars last on the average five years, so that 20 per cent of existing cars are replaced, on the average, each year. Then an increase of 10 per cent in demand for motor transportation will raise the demand for cars 50 per cent.

In this case, as in the case of durable producers' goods, the total demand for cars (replacements plus new orders) will begin to shrink when the demand for automobile service is still on the rise.

In similar fashion, the demand for cars will soon fall to replacement levels, and if shrinkage in demand for the service of cars continues, causing users thereof to postpone replacements, demand for cars will fall to very low levels indeed.

Commodity Stocks

The same magnifying effects will appear wherever dealers or producers hold stocks in some relatively fixed proportion to sales or production; then any increase in demand for the goods themselves will tend to be magnified when passed on to the producers of such goods. In addition to the goods ordered to satisfy the consumer, a further order will be made to raise the stocks to their appropriate level. Thus, if a merchant sold 100,000 units in a month and kept on hand permanent stock equal to one-half month's sales (50,000), then an increase of 10 per cent in the demand of consumers will cause him to order 10,000 more for sale and 5,000 more for stock, a total increase of 15,000. Thus an increase of 10 per cent in demand increases orders by 15 per cent. How much this magnification may be depends on the ratio of stocks to sales—the larger the ratio, the greater the magnification.

On the downturn, as demand shrinks, dealers will meet the situation by sales from stock, thus reducing orders more than proportionately. Indeed, they may cease orders completely until the stock reaches whatever low figure is conventionally regarded as the irreducible minimum.

This process, dictated by the business necessity of keeping some stock on hand, is intensified by the normal reaction of dealers to price change. In periods of rising demand, with prices rising, dealers, for speculative reasons, increase the ratio of stock to sales; similarly, in periods of falling prices, they reduce it. Stocks are like reservoirs. They gradually fill up in good times; they gradually empty in bad times. Hence a variation in demand has magnified effects as the reservoir is gradually filled and emptied.

Secular changes, on the other hand, reducing the ratio of stock to sales, will at the same time reduce the importance of these derived fluctuations. Thus, during the 1920's, there seemed to be a growth of "hand-to-mouth" buying, originating from various causes, such as ease of delivery via improved transport, standardi-

zation of stocks, conscious efforts by dealers' associations to reduce inventories, and so on. All this reduces derived fluctuations.

One may fairly conclude that the demand for all durable goods, whether producers' goods, durable consumers' goods, or stock in the hands of dealers, is subject to intensified fluctuations whenever final consumer demand changes.

The Effect of Changes in Replacement Demand

This process of intensified derived demand, which, as we have seen, is directly proportional to the durability of the goods concerned, will be further exaggerated provided replacement demand is speeded up in expansion and slowed down in contraction. If, in the case of producers' goods, the demand for the output thereof is sufficiently encouraging, replacements may be speeded up, obsolescence scrutinized more closely, and the opportunity taken to improve the productive setup. Should this happen, derived demand will be still further stimulated. On the downturn, if the fall in demand is sufficiently discouraging, replacements may be delayed, the margin of obsolescence pushed out, and the management in general be moved to get along and make things do. Under these circumstances, derived demand will have the maximum variability.

Similar considerations apply to houses, automobiles, and other durable consumers' goods. We have already seen that speculative reasons may cause dealers to increase and decrease the ratio of stocks to sales in times of rising and falling demand, respectively.

It is to be noted that the opposite of this *might* take place. In times of rising demand, producers may intensify the use of existing machinery, draw into service semiobsolete equipment, and work long hours. In times of falling demand, some producers, at any rate, may find the period convenient for modernizing their equipment, since prices may be low and, furthermore, the competition for trade puts a premium on methods for reducing cost.

To the extent that this policy is followed, the acceleration of derived demand is made less intense, and the forces arising out of durability of equipment are to that degree neutralized. Moreover, there is evidence that this result may actually occur. If, for any reason, business is experiencing overcapacity, then clearly

until such capacity is "used" (that is, used to some normal level, determined by the custom of the industry), acceleration will be delayed. This outcome is, of course, a normal condition as business emerges from depression, and leads to the conclusion that the forces of "acceleration" do not necessarily get under way in the phase of revival. This aspect may explain, also, why after a prolonged boom, such as occurred in the 1920's, recoveries are more than usually difficult. The equipment trades cannot experience much more than replacement demand until capacity is reached. Of course, both in the matter of durable consumers' goods, such as houses, and in durable producers' equipment, such as factory buildings and machinery, revival, wherever it takes place, is likely to encourage optimistic views of future needs and bring about some speculative replacement and additions even though "capacity" has not been reached. If capacity includes a good deal of obsolescent equipment, what looks like addition in less optimistic times may now be regarded as replacement.

All things considered, one may fairly conclude that, whatever changes may take place in replacement policy, they are likely to have the net effect of intensifying replacements in expansion and retarding them in contraction, and that this outcome will tend to increase the intensity of fluctuations of derived demand.

Cumulative effects

It will be noted that the processes just described may be cumulative. An increase in the demand for automobiles results in a greater increase in the demand for cars from dealers. This increase, in its turn, tends to be translated into a somewhat greater demand for cars from manufacturers, since to the transmitted consumer demand dealers will add their further demand, not only to keep their stocks up to the normal ratio but to take care of possible future increases in sales at higher prices. Provided capacity is not seriously in "excess," the demand for cars from manufacturers will cause them to add new demand to replacement demand for equipment; and the producers of equipment will go through the same intensification in their own demand. So the process goes on. The result is to translate small changes in demand by consumers for the service of durable consumption goods into large changes of demand for ultimate equipment and materials. Then the

fluctuations tend to increase in intensity as they reach stages of production farther away from the consumer, the "highest" stages showing the most marked fluctuations.

The statistical evidence

It is apparent from the various possibilities surrounding the operation of the principle of acceleration that the actual results thereof in practice may be very diverse—so much so that attempts to establish the principle by statistical or other process of verification are not likely to be attended by success. Changes in the average age of equipment, changes in the inventory habits of dealers, conscious attempts to stabilize production by adding to plant in recessions, inventions that hasten obsolescence—any or all of these currently operating tendencies will obscure any simple relation in actual practice between changes in consumer demand and changes in the demand for equipment.

Such evidence as is available cannot be considered conclusive.[2] Clark presents confirmatory evidence in respect to automobile production, 1917–1932. He finds also a significant correlation between increase of rolling stock and *rate* of increase in traffic demand in the United States. Kuznets finds the amplitude of cyclical change in the demand for capital equipment in railroads falls far short of that indicated by the net change in the demand for their services. Tinbergen, on the other hand, finds this relation to be high in Germany, but low in France and the United Kingdom. The same author finds no significant correlation in either cotton spinning or shipping, or between changes in production indexes of investment goods and the rate of increase in indexes of consumer demand (although the latter were agreed to be inadequate). This conclusion in regard to general indexes is borne out by Kuznets.

Moreover, even were significant statistical correlation established, it would not prove that the explanation lies in the principle of acceleration and the technological factors involved therein.

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[2] See J. M. Clark, *Strategic Factors in Business Cycles* (New York: National Bureau of Economic Research, 1934), p. 38, and *Economics of Overhead Costs* (Chicago: University of Chicago Press, 1923), pp. 394–396. S. Kuznets, "Relation between Capital Goods and Finished Products in the Business Cycle" in *Essays in Honor of W. C. Mitchell* (New York: Columbia University Press, 1935). J. Tinbergen, "Statistical Evidence on the Acceleration Principle," *Economica,* May 1938.

Thus, even if one established beyond question that durable producers' goods had similar but greater fluctuations than those displayed in consumers' goods, the reason for this would still have to be sought. The reason could be found in a number of possible factors, such as stimulus of profits in rising price periods, tendency of bank loans to be made to producers in periods of credit expansion, tendency to excessive saving and cumulative investment, cyclical fluctuations in inventions, and rigidity of prices of durable goods causing excessive rise and fall of production in the face of changing demand. Thus Tinbergen found that such correlation as existed between output of durable goods and variations of demand could be better explained as a reaction to profits than by the principle of acceleration.

This principle, one must conclude, remains therefore an interesting but unproved hypothesis.[3]

[3] The acceleration principle is not commonly regarded as the fundamental factor making for cyclical change. It establishes one reason for the excessive fluctuations of capital goods production, but it does not in itself offer any reason why the advance it initiates comes to an end or how the decline is in time replaced by a period of good times. It merely offers an explanation why expansions and contractions, when they are brought about, are so considerable. It does not account for the origin of these variations. An exception to this general conception of the acceleration principle is offered by R. F. Harrod, English economist, who holds that this principle, which he calls the "Relation," occupies the "pride of place" in the forces which make the cycle. His theories are set forth in his book *The Trade Cycle* (Oxford: Clarendon Press, 1936), especially in Chapter II.

10

REAL CAUSES: AGRICULTURE AND THE BUSINESS CYCLE

THAT THE NATIONAL WELFARE depends upon agricultural prosperity is a common opinion in this country. Businessmen have taken it for granted that changes in the volume of the principal crops are an important factor in business prosperity or depression. They accept good crops as a sign of good business and poor crops as a potent cause of depression. Always they have looked to agriculture to lift them out of slumps, and they are ready to attribute the prolonged depression of the 1930's to the inability of agriculture to stage a recovery of its own. They tend to regard good crops as a spontaneous source of new demand that fills the pockets of the farmer with money, and, at least in the past, they have commonly adjusted their plans to the state of the harvest and the general prospects of the rural districts.

This belief in the importance of the crops has been shared by economists, at least to the extent that they include agricultural changes among the contributing causes of cyclical variation in industry. A few not only accept agricultural factors as important, but also regard them the chief generating cause of cycles. Among them are those who trace cycles to meteorological causes (such as are associated with sunspots) operating through the medium of crop variations.

Therefore, we may ask: Are these opinions well-founded? Are changes in agricultural output capable of bringing about important changes in total activity of business? Are these changes of output independent and autonomous changes, not brought about by changes in business itself? Are they outside forces, "exogenous factors," which, through their effects on the demand for industrial output, may claim to be "real" causes of business fluctuations?

Is agricultural change a cause or an effect?

First of all, we must know how the line of causation runs. Even if agricultural and business prosperity go together, we cannot deduce that the former is the cause of the latter. It would seem just as probable that business changes would bring about changes in agriculture. Unless we can establish that agriculture is a cause and not just an effect, we can draw no useful conclusions.

But it seems that both the nature of agricultural changes and the observed behavior of agriculturists point to agriculture as the causal force.

The output of the principal crops, which is what lies in the mind of those interested in the agricultural factors in the cycle, seems to follow a pattern imposed largely by variations in weather and climatic conditions. The important changes in agricultural output arise from changes in yield per acre rather than from changes in acreage planted. Furthermore, although changes in yield per acre could be due to more or less intensive cultivation of the soil, they appear to be caused principally by changes in climatic conditions, such as wind, sunlight, rainfall, and storms. In short, the cause of variation is to be found in the vagaries of nature rather than in the deliberate action of men. Hence, if any relation is established between changes in agricultural and industrial output, the cause will run from agriculture to industry rather than the reverse. Changes in business output *might* induce similar changes in agriculture, but in fact they do not appear to do so, since the observed changes in agricultural output seem due largely to other causes than human volition.

The probability that agriculture is the causal factor is fortified by the observed behavior of agriculturists in the face of external change. Obviously, changes in business activity, including as they do substantial changes in the demand for the output of agriculture, should induce similar changes in agricultural activity. But for economic as well as physical reasons, the adjustments of agriculture to those changes are not easy. Indeed, it is likely to be so delayed that, for periods as short as the business cycle, it cannot be counted on as an important factor in the situation.[1]

[1] Cf. Russell C. Engeberg, *Industrial Prosperity and the Farmer* (Washington: The Brookings Institution, 1927).

Decisions to change agricultural output must anticipate by many months the actual marketing of the product. This fact makes forecasting difficult and tends to discourage change unless the conditions of demand seem to be reasonably enduring. Change often involves (especially where one crop is to be substituted for another) the whole farm organization plan, and this often is greatly limited by the nature of the region, the soil, and the arrangement of the crop rotation. The cost of this transformation is bound to increase the slowness of decision characteristic of agricultural producers. When demand falls, production is not reduced so quickly as would be supposed, partly because farmers feel that prices are beyond their individual control and that any reduction of output merely reduces income; even if prices are low, they may still cover direct charges and out-of-pocket expenses, thus making it worth continuing output. Moreover, farming is not merely a source of income but a way of living.

For these reasons, it can be assumed that variations in agricultural output are effective causes rather than consequences of accompanying changes in industrial production. They are not only "real" causes, but they are independent causes, not induced by changes in business activity. We can now proceed to investigate how these causes work out and how important they are.

The consequences of changes in agricultural output

Changes in agricultural output affect business in two distinct ways. One is through changes in the *volume* of crops, particularly in bringing about changes in all the activities directly or indirectly connected with the outturn of the crops. The other is through changes in the *value* of the crops, which bring about changes in the relative purchasing power of the agricultural and nonagricultural population, and thereby various repercussions on business.

Effects of increase in volume of output

The most obvious effect on total business activity comes from larger volumes of crops that must be harvested, transported, marketed, and processed. The harvesting then needs more men; railroads are more active hauling goods; more materials must be put through the various processes; more materials enter storage for

carry-over; and a greater flow passes through the wholesale and retail channels. If the increase in output is considerable, farmers may have to add to their equipment. Railroads, elevators, and mills may also have to add to their facilities; and so a new circle of activities that will affect business over wide areas is brought into play.

The increased output of agricultural goods will cause a fall in agricultural prices, the extent thereof depending upon the elasticity of demand for these goods. If, as is commonly held, the demand is inelastic (has an elasticity less than unity), the fall may be considerable. In any case, there will be a fall; if the price level is rising, the fall will be relative to the prices of industrial output. This influence is most favorable on all business using agricultural raw materials because it increases the margin between their own prices and costs. Furthermore, the fall in foodstuff prices reduces the cost of living of workers, disposing them toward acceptance of at least the ruling level of money wages. This fact may be a general encouragement to all manufacturers, as the pressure of activity induced by the volume of crops hardens the price level of nonagricultural output.

It should be noted, too, that these encouraging effects do not have to await the actual realization of good harvests. The machinery of forecasting the state of the crops has become so effective that industrialists may proceed with confidence well before the crops are harvested. Prices are affected in the speculative market for futures before the actual movements of the visible supply. Indeed, it has been noted that the interval between agricultural causes and industrial effects has apparently diminished. Whereas in the 1870's abundant harvests took two years to work out their full effect on the iron industry, and whereas in the 1890's one year was required, in recent years the effects tend to be simultaneous.[2]

This speeding up of consequences may be furthered by the psychological attitudes of business, which cause entrepreneurs to think of big crops as advantageous and move them to produce more in anticipation of the increased demand they suppose will arise.

There may be still another reason for this anticipatory action.

[2] H. S. Jevons, quoted in Pigou, *Industrial Fluctuations* (London: Macmillan & Company, Ltd., 1927), p. 39.

Some economists, notably Pigou and Robertson, hold that the effort-demand for agricultural output is decidedly elastic. They mean that a greater output of agriculture not only stimulates consumption (because of lower prices), but also increases the willingness of industry to expand its output by work, and thereby increase the "real" demand for agricultural products that consists of the output of other products. Robertson argues that, wherever there is less than full employment, the marginal disutility of work is so low and so slow to increase, and the marginal utility of food is so high and so slow to decrease, that workers in general are disposed to favor increase of output (and real purchasing power) and to be ready to aid entrepreneurs in bringing this about.[3]

It is possible, of course, that the occurrence of a large crop may coincide with a condition of full effective utilization of resources. Nature is capricious and cannot be relied on to stage her agricultural generosity in periods of low industrial output when the stimulus would clearly do the most good. If this untoward expansion takes place, the result may be disastrous rather than stimulating. The demands for capital and labor to carry on the harvesting, transporting, storing, and processing of the crop may strain existing facilities, raise the rate of interest, and at a time when industry is very sensitive to the slightest increase of cost, supply the one element needed to start a depression. This situation seems to have arisen in the year 1907, when an exceptionally good crop coincided with the culmination of an extended period of expansion.

It seems fair to conclude that an increased volume of agricultural output is definitely stimulating to industry, save when it comes at peaks of expansion when further stimulus is useless and likely to be dangerous.

Effects of changes in the value of agricultural output

Whatever consequences changes in the aggregate value of output may have on business are brought about through the shifts of purchasing power between the agricultural and the nonagricultural community. It may be said that a greater volume of agricultural output definitely makes for expansion, but the conse-

[3] D. H. Robertson, *A Study of Industrial Fluctuations* (London: P. S. King & Co., 1915), p. 133.

quences of the shifts in purchasing power following a change in the value of output are neither simple nor certain.

It would seem that shifts of purchasing power would have no special consequence. If the farmers gain in aggregate income from a large crop, as would be the case if demand for their products were elastic, the rest of the people lose proportionately. If the farmers lose, as when demand for their products is inelastic, other people gain proportionately. In the rare case where elasticity of demand is unity, no shifts of purchasing power take place. In a broad way, therefore, and particularly in a closed economic system with no import-export relations, there would appear to be no important consequences to be expected from shifts in purchasing power.

Let us examine this in detail.

Is it important who gets the money?

On the most probable assumption—namely, that the demand for agricultural products is inelastic—one may expect the following income changes from an increase in crops: The total amount spent on farm products will be smaller. Of this smaller amount, a larger fraction will go to the transporting and distributing agencies, leaving a still smaller amount for the farmers. The railroads will carry a larger volume, with no probable changes in rates per unit of traffic. It is well known that the middlemen, the elevators, the warehouses, the wholesalers, and so on, not only increase the volume of turnover with larger crops, but, owing to relatively inflexible charges, make a larger margin of profit per unit dealt in. Thus the farmers will have less to spend, the railroads and distributive organizations more, and the general consumer will be able to turn the purchasing power released from agricultural uses into the channels of industrial buying.

Thus the aggregate of purchasing power expressed in money is redistributed in various ways, and the redistribution will benefit some industries at the expense of others. Industries catering to farmers will flag; those catering to others will enjoy a boom. Whether this redistribution will tend to generate a cyclical expansion is another matter. If the spending habits of the different groups involved were similar, it would seem that shifts of purchasing power would have no consequences. On the other hand, if habits differed, some effects might be expected. Thus, if the

nonfarm population put money into circulation at a faster rate than the farm population, then the shifts involved in our assumptions would tend to stimulate activity as a whole. Or again, if the effect were to shift income from groups that spent to groups that saved and invested, the resulting expansion of investment might, via the period of gestation, set in motion the broad forces of cyclical expansion. But as little or nothing is known about the comparative economic habits of these various beneficiaries or victims of shifting purchasing power, these possible sources of expansion may be ruled out, and the general proposition reasserted that, in a closed economic system, shifts of purchasing power such as are involved in changes in agricultural outputs are neutral in respect to cyclical changes.

The effect of exports

But in a system capable of export, such as that of the United States, other factors are brought into play. With larger crops, exports tend to rise. Furthermore, the wide area into which such exports are sent, and the possibility that the demand is more elastic than at home, tend to limit the reduction of price consequent upon the increase of supply, so that the money receipts of the exporters are increased in the aggregate. The corresponding loss of purchasing power is imposed not upon other members of the same country, but upon the industrial or agricultural population of the rest of the world. Moreover, this increase in money receipts will, in international trade, take the form of gold. (Even in the disturbed period of the 1930's, gold flowed into this country, in part at least, in payment for an excess of exports.) This new gold increases by the customary multiple the available supplies of credit, tends to lower the rate of interest, and sets in motion an inflationary stimulus to industry as a whole. If the increase of home agricultural output happens to coincide with a shortage abroad (as, for example, in 1879, 1896, and 1947 in the United States), then the inflationary consequences are at their maximum, and the stimulus to industry in general is the greatest.

The net effect of agricultural change

From this analysis, one is tempted to conclude that, save when they occur at peaks of expansion, large crops are a definite stimulus to industry. The increased volume elicits greater activity in vari-

ous fields, and the lower price reduces the cost of production in industries with the stimulus this implies. It is true that the shifts in purchasing power cannot be assumed to be stimulating, but at least they are not likely to be restrictive, and when they are associated with considerable exporting, may be definitely expansive.

Similar and opposite effects may be expected to follow short crops. The volume of industrial activity needed in connection with the various processes associated with agriculture falls. Costs rise in industries. Purchasing power is redistributed in opposite ways, and although not certainly restrictive, is not likely to be expansive. In case importation or great reductions in export come about, it may have deflationary results.

Thus one would expect to find periods of low crops and high prices corresponding with or preceding depression in industry, just as big crops and low prices would be expected to precede prosperity in industry. Were this borne out in actual experience, we would be justified in holding that agricultural changes are a genuine and potent influence in the formation of cyclical fluctuation. This evidence we will now examine.

The evidence of statistics

The theory set forth above is plausible enough, but it is not easy to find any real confirmation thereof in the statistics of agricultural and business output. The evidence is conflicting, so much so that well-known authorities on forecasting allege that "neither as cause nor as effect is the size of the crop related in any consistent recognizable way to the fluctuations of business activity." [4]

Some economists have found, for example, that agricultural production, when measured as deviations from a line of moving average or other line of trend, discloses recognizable cyclical fluctuations, with a measurable wave length, say seven or eight years.[5] Others find therein no evidence of cycles, but only year-to-year oscillations.[6] Even where cycles in agriculture are found, it can-

[4] Hardy and Cox, *Forecasting Business Conditions* (New York: The Macmillan Company, 1927), p. 154.

[5] V. P. Timoshenko, *Role of Agricultural Fluctuations in the Business Cycle* (Ann Arbor: University of Michigan, Bureau of Business Research, 1930), makes it seven years. H. L. Moore, *Economic Cycles* (New York: The Macmillan Company, 1914), puts it at eight.

[6] W. M. Persons, *Forecasting Business Conditions* (New York: John Wiley & Sons, 1931), p. 193.

not be certainly established that these bear any definite relation to cycles of industrial activity. Henry L. Moore, who is the most uncompromising exponent of the agricultural causation of business cycles, finds a high correlation ($r = 0.718$) for the years 1870–1907 between agricultural production and pig-iron production two years later. Timoshenko, while he finds some positive correlation between crops and pig-iron production, puts the coefficient at a much lower and less certain figure. Hardy and Cox, examining Day's index of agricultural production from 1879 to 1925, find no significant correlation between agricultural production and trade activity.

The annals of business

Those who turn their scrutiny to the annals of business activity rather than to statistical correlation seem to get better results. Mr. A. P. Andrew, writing in 1906, concluded an admirable study of the influence of crops on business conditions by these remarks:

> While one must admit that the influence of the crops has not always been the predominant factor in business, one can readily perceive their usual and very extended significance. . . . Crises have not ensued invariably and immediately upon every crop failure, nor have eras of up-building followed with clock-like regularity after every bountiful harvest. Yet one cannot review the past forty years without observing that the beginning of every movement towards business prosperity and the turning points towards every business decline (movements which have frequently antedated the actual outbreak of crises by several years) were closely connected with the out-turn of the crops.[7]

That this outturn of the crops is essentially the physical, not the financial, outturn is indicated by two other confirmatory testimonies. Both of these, it will be noted, imply that it is the level of agricultural prices, not the level of agricultural income, which is the important factor in business fluctuations.

Thus L. H. Bean, Economist of the Department of Agriculture, after a study of the relation of agricultural prices and business cycles during the period 1875 to 1927, reaches the following conclusions: There were six periods of relatively low agricultural prices. Each of these was followed by a period of industrial re-

[7] A. P. Andrew, "The Influence of Crops on Business Conditions," *Quarterly Journal of Economics*, Vol. 20, May 1906, p. 351.

covery and prosperity. There were five periods of relatively high agricultural prices. Each of these, except one (1900 to 1903), was followed by a period of business depression.[8]

A similar conclusion is reached by V. P. Timoshenko in his study, *The Role of Agricultural Fluctuations in the Business Cycle.* After examining the relation between changes in the ratio of agricultural to industrial prices and the ebb and flow of business activity, he concludes that revivals seemed "almost without exception" to depend on a low ratio and recessions "very often" on a high ratio of agricultural to industrial prices.

These uncertain conclusions from actual experience are doubtless explained by the somewhat unreal assumptions involved in the theory of agricultural influence.

Agricultural influences less important than they seem

1. We have argued as if agriculture were a unit and agricultural output one crop produced in one territory under a single set of conditions. Actually there are many crops and many conditions, and effects are likely to be greatly modified by this fact. The conditions favorable to one crop may not favor another. Wheat may boom when cotton is in slump, and the aggregate influence of crops on business may be much reduced in consequence. Furthermore, crops move into market at various times, and the changes in business activity which may be expected do not occur at once. The effects are diffused, and being diffused, may not be very important as a "starter."

2. Again the machinery of carryover which has been developed reduces the effect of the fluctuations of agricultural output. The bulges of production do not necessitate equivalent bulges in consumption, including consumption by industrialists; hence, prices do not fluctuate so drastically as they otherwise would. In good years, crops are held off the market, to be disposed of in times of better prices. The tendency on the part of governments to carry this evening-out process still further, as exemplified by the "ever-normal granary" of the Roosevelt administration, may sub-

[8] L. H. Bean, "Some Short Time Interrelationships Between Agriculture and Business," in J. L. Snyder's *Business Statistics* (New York: McGraw-Hill Book Company, Inc., 1929), pp. 107–124.

stantially reduce some important impacts of agricultural change.[9]

3. Finally, it should be noted that, whatever the actual consequences of variations in crops, their power to modify the course of business must depend upon the importance of agriculture in the economic system as a whole. As this importance falls, variations have less significance. As society grows, and with better methods of agriculture continually emerging, less and less of its resources are devoted to the production of its food supply. The fraction of its people devoted to agriculture, or at least that fraction which is devoted to the actual promotion of agricultural output, tends to grow smaller. Its income becomes a smaller fraction of the national income. Indeed, this outcome is what would be expected in any society where average incomes are rising. Gains in income are more likely to be spent on nonagricultural than on agricultural products. The result of this must be to diminish the effectiveness of agricultural changes as a factor in business cycles.

On the basis of this rather uncertain factual evidence, one may perhaps agree with Pigou's cautious conclusion that "harvest variations occupy a significant place among the impulses behind industrial fluctuations, good harvests tending to promote expansions and bad harvest contractions of industrial activity." [10]

Meteorological theories

The recognized fact that agricultural fluctuations are due primarily to natural conditions rather than to human volition raises the question of whether natural conditions themselves are not subject to recurring fluctuations capable of explaining the apparent rhythm that appears in both agricultural and industrial activities. We have seen that business fluctuations are genuine cycles—that is to say, although not necessarily periodic, at least subject to a recurrent rhythm capable of measurement. It has been tempting to speculate that the source of this rhythm lies in the behavior of natural phenomena, which imposes a meteorological or cosmic variation on the facts of economic life.

[9] See J. M. Keynes' argument for storage as a means of damping down the trade cycle, "The Policy of Government Storage of Foodstuffs and Raw Materials," *Economic Journal*, September 1938.

[10] A. C. Pigou, *Industrial Fluctuations* (London: Macmillan & Company, Ltd., 1927), pp. 40–41.

Sunspots and the cycle. The most influential, certainly the most celebrated, of the meteorological theories is that of W. Stanley Jevons, the English economist, who in 1875 set forth the proposition that variations in the atmosphere of the sun, as evidenced in the frequency and magnitude of sunspots, determined the rhythmical fluctuations of industry. He was very much impressed with the periodicity of the great English crises of the nineteenth century—1825, 1837, 1847, 1857, and 1866—and with their average length of 10.5 years, the more so when it was currently established that sunspots had a cycle of 10.45 years. Moved by this coincidence, he worked back over the records of English trade in the eighteenth and nineteenth centuries, finding therein 16 crises in 157 years, with an average interval of 10.466 years. Jevons rejoiced to find that the apparently isolated episode of the South Sea Bubble fitted into the pattern.

Convinced that he had laid bare a genuine causal factor, Jevons set himself to find a rational explanation thereof in the sequence from sunspots to weather, from weather to changes in agriculture, and thence to equivalent changes in industrial and commercial activity. Hoping to verify his analysis, he examined Thorold Rogers' great history of agricultural prices but was compelled to admit that 10 to 11 year cycles were not discoverable therein. Apparently other factors besides solar cycles were at work. Nevertheless he kept to his belief that sunspots did explain the periodicity of cycles, and that this came about through agricultural variations. In 1867, John Mills had suggested that waves of emotional aberration might account for crises, and Jevons toyed with the idea that men might be so constituted as to produce a 10 to 11 year cycle of behavior provided even slight recurrent stimuli came via agriculture from variations in solar radiation. This nod to psychological influences did not change the essentials of his theory.[11]

Change in the accepted length of the sunspot cycle, the average of which is now put at 11 to 13 years, and change, too, in the intervals between crises cast a shadow of doubt over Jevons' meteorological theories. His son, H. S. Jevons, attempted to rescue them from decay by appropriate modification. It would appear that,

[11] See the papers on commercial cycles in his *Investigations in Currency and Finance* (London: Macmillan and Company, 1884).

among other meteorological cycles, there exists a three-and-one-half-year period in solar radiation and barometric pressure. The younger Jevons found a three-and-one-half-year period of crop yields and an apparent tendency for trade cycles to appear in seven- or ten-and-one-half-year intervals. He thought that two or three cycles of crops were needed to bring about the observed cycles in business, but he made no attempt to demonstrate this connection.

American variations on sunspot theories. The most systematic of recent attempts to establish the relation between meteorology and business cycles is the work of the American economist, Professor Henry L. Moore.[12] Professor Moore, by harmonic analysis, claimed to have discovered an eight-year cycle of rainfall in Ohio and Illinois which he regarded as causing like variations in the yield of agricultural crops. Furthermore, he found a high coefficient of correlation between crop yields per acre and important indices of business conditions. For pig-iron production, the coefficient of correlation was 0.718 with a two-year lag, and, for the wholesale price level, 0.800 with a four-year lag. Thus the connection which Jevons was seeking seemed to be at last completed. The cycle of rainfall determined the cycle of crops, and they, in turn, determined the cycles of business activity. But sunspots were not responsible for the meteorological variations; the real cause was the transit of Venus which, at intervals of eight years, comes directly into the path of solar radiations and through its magnetic field affects the streams of electrons flowing from the sun, and hence earthly magnetism and the weather.

In all these variations of the original Jevonsian theory, agriculture is the medium through which meteorological influences are transmitted to industry. But it appears that this is not the only possible medium. Indeed, it is conceivable that agriculture has nothing to do with the problem. Professor Ellsworth Huntington, always a bold generalizer in his field, offered the theory in 1919 that variations in health, which often seemed to be a result of business cycles, were in fact a cause thereof; and that they themselves were the resultant of variations in weather and solar radiation. The possibility that the link between meteorology and business may lie in human, rather than agricultural, vitality has been

[12] See his *Economic Cycles* (New York: The Macmillan Company, 1914); and *Generating Economic Cycles* (New York: The Macmillan Company, 1923).

explored recently in the interesting investigations of Garcia-Mata and Shaffner.[13] After elaborate statistical measurements, the authors conclude that there is a clear correlation between the major cycles of nonagricultural business activity in the United States and the solar cycles of 11 years. As they saw it, the evidence made it almost impossible to believe that this connection is accidental, and, as no correlation was found between the solar cycle and variations of crops, the causal connection must be found in some other medium than agriculture.

This medium, the authors suggest, may be found in variations in human vitality brought about either by the variation of ultraviolet rays or by the variation of magnetic activity associated with the cycle of sunspots. Changes in ultraviolet radiation are capable of causing variations in health and vitality, whereas changes in magnetic activity conceivably may affect the mental state of people and make for the variations of optimism and pessimism that have been observed to be a factor in business cycles. The fact that sunspot cycles have been found to correlate with such evidences of growth as the number of tree rings and the receipts of rabbit pelts indicates that ultraviolet radiation may be the important factor. If these hypotheses are valid, then we have booms simply because we feel good, not because of any impelling change arising from agricultural or any other nonhuman source.

Meteorological influences unproved. Our survey of meteorological influences has thus led us into conflicting and confusing testimony. That there are meteorological cycles capable of affecting human affairs seems plausible enough, and the correlations discovered by statistical analysis are often, like other correlations, quite impressive. But economists seem content to remain skeptical in regard to these theories, and perhaps it will be enough to accept agricultural change as among the factors contributing to cycles, without any commitment as to the validity of meteorological causes.

Indeed, agricultural influences are probably, at best, an example of episodic initiating causes, or starters, determining often the time of revival or recession and thus the length of particular cycles.

[13] C. Garcia-Mata and F. I. Shaffner, "Solar and Economic Relationships," *Quarterly Journal of Economics*, Vol. 49, November 1934.

They are in themselves not adequate to account for the actual shape of the cycle, which is more probably the result of the responses made by the business world to originating forces, responses determined by monetary, psychological, and institutional factors.

11

PSYCHOLOGICAL CAUSES[1]

THE THEORIES THAT we will now examine are founded on the distinction between real causes and psychological causes of expansion or contraction of economic activity. A real cause is a change in actual economic conditions. A psychological cause is a change in men's attitude of mind toward actual economic conditions. When a real cause emerges, it can be only because economic conditions have actually changed, as, for example, an increase in the output of agriculture because of favorable weather. A psychological cause can exist even though no change in actual conditions has occurred, as when, in a boom, each businessman is prone to exaggerate the expectations of profit likely to be obtained by himself as compared with others. Ordinarily, the two causes are closely related and interconnected. A change in actual conditions (a real cause) sets up a similar change in men's attitudes, so that the consequence on activity is partly a result of a valid reaction to the real change and partly a further and added result of seeing this change in a somewhat different attitude of mind.

In a world where no real cause leading to change in activity arises (a stationary state), it would seem unlikely that psychological causes of change could exist, since circumstances would repeat themselves with such regularity that change in attitudes of mind toward economic data would scarcely tend to occur. Nevertheless, even here psychological causes *could* arise, as, for instance, if variations in vitality occurred such as would lead to periods of optimistic or pessimistic attitudes among the generality of persons.

[1] See especially A. C. Pigou, *Industrial Fluctuations* (London: Macmillan & Company, Ltd., 1927), Part I, Chapters VI and VII. Pigou's concept of psychological causes as implying error is adopted here.

On the other hand, even in a world of real causes of change (a nonstationary state), psychological causes need not arise, provided persons were perfectly intelligent and capable of forming valid judgments (unbiased by changes of attitudes) in respect to the real causes which occur. People being what they are, a world of real causes is likely to be a world in which changes of attitudes do take place; consequently, judgments are rendered and actions are taken which are not valid judgments or correct actions and which would not appear if we were not prone to mistakes.

Fundamentally, therefore, psychological causes arise from mistakes or errors of judgment. We get a wrong view of the facts. We are misled. We change our view of the facts, although the facts have not changed; and when the facts do change, our frame of mind is somehow so influenced that we cannot make correct judgments as to the significance of the change.

Therefore, we may speak alternatively of psychological theories as theories based on the working of error. It is now our task to examine the sources of error in economic society and lay bare the various reasons why mistakes in judgment occur, and particularly why, instead of canceling out (mistakes in one direction canceling mistakes in another), they tend to work all in the same direction for considerable periods of time.

Errors of forecast

The fundamental cause of error, or, to be more exact, errors of forecast, is to be found in two different but interrelated aspects of modern industrial societies. The first of these aspects is the long and roundabout processes of production imposed on us by a capitalistic economy. The second is the individualistic organization of production by which a multitude of independent entrepreneurs, bound together by no central authority, but each one specializing on his own part of the whole, try to satisfy as best they can society's demand for goods. Both of these aspects happen to be found together in the typical modern economy; but both are not equally inherent or inescapable. The first is fundamental to any society using capitalistic methods. It would be here, even if the second were not. The second, on the other hand, is not essential or inherent. In fact, there is evidence that it is disappearing.

Let us now see how these features of our economy open the way

for errors of forecast, such as are capable of producing alternating periods of expansion and contraction.

Roundabout processes of production

Owing to the complex division of labor and the organization of production into many stages from the raw material production to the delivery of the goods into the hands of the ultimate consumer, there emerges a more or less extended period of time between the decision which a producer must make and the final results of his decision in a flow of consumable goods. The major activities of our society are undertaken in anticipation of demand. Goods are not made to order. "Expected facts are substituted for accomplished facts as the impulse to action," and when this is so, the way is opened for errors of forecast. The result is a possibility of mistake and wrong adjustment, the realization of which is postponed too long to be of corrective value. When the belated realization has come, the evil has already been done.

Furthermore, the longer the average interval which elapses between decision and final result, the greater the possibility of mistake and the more serious the probable maladjustment. Hence one would expect to find and one does find the greatest variation in activity in those industries which are farthest removed from the ultimate consumer, the iron and steel industries, the copper mines and smelters, and the construction trades—in short, the industries producing capital goods or production goods. If it is merely a question of deciding, for example, whether, with existing plant, to produce more shoes, the range of error is small. Forecasts can be made of the probable market for shoes a month hence without much danger that, in so short a time, unexpected influences will come in to change the demand. But if a plant for making shoes, which may take many months to construct and to put in working order, is to be erected, what must be made is a forecast of the demand for shoes a year or two years hence. During this interval of time, in a dynamic society, the possibilities of disturbing factors are so great that the range of error is much enlarged.

Hence, the more dynamic the society, the more important is the operation of error as a cause of fluctuation. A dynamic society is a society in rapid change, and rapid change means more readiness to make far-reaching decisions, at the same time that it introduces

more uncertainty as to the ultimate usefulness or value of the results of the decisions. Thus some of the most notorious booms and crises of the nineteenth century, first in England, then in the United States, were directly associated with, and presumably due to, the excessive expansion of railroad building. The enthusiasm created by the development of a new industry, and later, the successive waves of expansion of railways into new territory made errors of forecast easy; and the lapse of time between effort and fruition, with all the possibility of change involved, exposed even sensible forecasts to unusual hazards.

Other causes of mistakes of forecast

The same danger of mistaken forecast which arises from the time interval that modern methods have inserted between production and consumption is imposed on us by distance. Producing for a distant market makes forecasting more difficult by imposing on the forecasters the problem of calculating the demand, exposed as it is to every conceivable change, of remote groups of purchasers. One might add that, as modern ways of living are increasing both the time and the distance intervals between the various stages of production and final consumption, the problem of forecasting may well be becoming more formidable and the danger of cumulative error more serious.

There is some ground to believe, further, that the possibility of error is enhanced by the increasing variability of consumers' choices in a highly complex industrial economy. Consumers in a wealthy society have, on the average, a relatively high standard of living; a standard that, by its very nature, is bound to include not only a great variety of goods, but many goods that are well above the level of staples. In a lower standard, staple and relatively unvarying consumption rules. In a higher standard, the importance of staple goods is much less. Probably, therefore, merely from this angle, producers cannot depend upon the certainty of consumption and find themselves exposed to greater variations than would be existent in a simpler society. Their expenditures on advertising and on all the means and maneuvers by which they try to carve out and keep a particular market seem to offer proof that this proposition is true. Curiously enough, these very efforts to standardize and stabilize individual markets may

increase the uncertainty of all. The competition in advertising and marketing is keen, and the result may well be not to increase the certainty of any one producer's market, but by enlarging the consumer's area of choice and encouraging him to shift from this commodity to that, to increase the uncertainty of all. Clearly, this outcome must increase the probability of errors of forecast.

The influence of competition

The errors of forecast imposed upon entrepreneurs by the time-consuming processes of production are reinforced by the fact of industrial competition.

In a competitive society, the output of any industry is the work of many independent producers. They have no agreements with each other to produce any given output. No one knows what the others are doing or what the aggregate output is going to be. The total output is the unplanned result of the efforts of all these uncoördinated producers. In these circumstances, an increase of demand is likely to result in an excess of output. Each producer, as he feels the impact of demand, will move to increase his output. As he has no way of knowing what his rivals are doing, and as his natural reaction to a favorable situation is to be overhopeful, he will seek not only to obtain his due share of the expansion, but also to improve his competitive position. A few producers may expand in this way with impunity; but if all attempt to do so, they will surely exceed the level of profitable output and glut the market with goods.[2]

To put it otherwise, if the lengthy processes of production may make it possible to miscalculate total demand, the fact of competition makes it probable that each producer will miscalculate his expected share of this total.

Furthermore, just as each producer in a competitive society overestimates his probable share of sales in a period of expansion, so he will underestimate his costs. In order to produce his added output, he must be prepared from time to time to buy more materials, hire more labor, and invest more capital. He must estimate as best he can the supplies of these factors and the prices at which

[2] See W. H. Beveridge, *Unemployment, A Problem of Industry,* Revised Edition (London: Longmans, Green & Company, 1930), pp. 59–60; and C. O. Hardy, *Risk and Risk Bearing,* Revised Edition (Chicago: University of Chicago Press, 1931), pp. 83–85.

they are likely to be available. For some materials, he can protect himself by "forward contracts" or "futures"; for others and for all labor and capital, he must pay the current price. As each has no way of knowing what others are doing, and as each is likely to give too little weight to probable rivalry in the market, the ultimate result is likely to be a general and unexpected scarcity of labor, materials, and capital, and a rise in prices, wages, and interest beyond all expectation.

These errors, of course, are the result of ignorance, and it would seem that adequate information should eliminate them. If we knew the relevant facts on the state of production, the stocks of goods in store, and the movement of goods into the hands of consumers, errors of this sort, even in a competitive society, would be greatly reduced. In the past these and other pertinent data have been conspicuously absent in our economic statistics. But today we are much more liberally supplied with adequate data. General indexes of production, of inventories, of consumption, give a fair, if not complete picture, of the flow of goods from producer to consumer. Intentions to add to capacity are currently reported to the Department of Commerce and the Securities and Exchange Commission. Such evidence, in proportion to the extent of its coverage, and the speed with which it is made available, should reduce the uncertainty arising from mere inadequate information. In any event, the businessman does the best he can, guided by past experience, and using what statistical barometers are at hand.

The period of gestation

The errors of forecast that these conditions foster are admirably illustrated by the behavior of business during what is commonly called the "period of gestation."

The period of gestation is the period of time covered by any given process of production. It is the period during which goods are being born and is measured from the inception of production to the day when the product is ready for delivery. This period of gestation may be short or it may be long; but for most commodities it is an appreciable interval. For some goods, such as additional consumable goods from existing equipment, the period may be very short—a day, a week, or a month. For others, such as mills, steel plants, office buildings, and railroads, the period may be one,

two, or several years. For slowly ripening resources, such as orchards, coffee and rubber plantations, forests, and so forth, years may have to elapse before they are ready to produce.

In a competitive society, this period of gestation gives rise to a very definite form of cumulative maladjustment directly traceable to errors of judgment induced by the situation itself. These errors of judgment are the entirely natural, and apparently appropriate, responses of entrepreneurs to the situation disclosed to them.

Let us suppose that the demand for goods has increased (either from without, as by an invention or an increase in crops, or from within, as by an increase in money in circulation and use), and that, therefore, the price level of consumable goods is rising. Under these conditions, entrepreneurs proceed (and rightly) to increase their output. Activity therefore increases. But during the period of gestation, despite this activity, output of consumable goods is not increased. The original increase in demand remains unsatisfied, prices remain high, and the motive to increase output still operates. What is more, to the degree that activity has already increased (and quite apart from any increase in consumption goods), more wages have been paid to workers as a whole. This increase in total wages (as well as all incomes from productive factors) tends to add to the demand for consumption goods, precisely at the time when no more consumption goods have yet been made available. As a result their price level is bound to rise.

So long, therefore, as producers judge the situation of the market by the level of prices (and this they are bound to do in a competitive market where the most useful clue to demand is price), they will be more and more led astray. Were they monopolists, or were they organized into highly integrated associations, they might be able to realize that what is going on is not a growing (relative) scarcity of consumption goods, but only the delay in their appearance incident to the period of gestation. As it is, they have no clue to the volume of production already set in motion, and therefore tend to follow, even if somewhat cautiously, the indicator of price; and this indicator remains set at a high level.

Thus, during the period of gestation (which, of course, is no single period, but many different periods), a powerful and continuing tendency to produce is at work, and as a result the response

to any given increase in consumptive demand is a magnified increase in the output of consumption goods. When, in due time, the period of gestation comes to an end, and the volume of goods coming on the market turns into a flood, the consumption goods markets will be overloaded and prices will fall.

From this angle, a boom is due to an error of forecasting arising from the period of gestation. The magnitude of the error and, therefore, the extent of the boom clearly depend on the length of this period. If it is short, the boom does not go very far. If it is long, it may be very extensive indeed. Thus a boom involving a demand for nondurable consumption goods, what might be called a "consumption boom," must be a short boom, because the interval between demand and actual output is short. (Such, it is argued, was the post-armistice boom of 1919–1920.) Where the boom is caused by an increased demand for producers' goods (itself based on the expectations of a sustained demand for consumption goods) or for the more durable and more slowly produced consumers' goods, then the boom is likely to be relatively long. All booms come to an end; and the end of every boom comes when, the period of gestation being over, producers are brought face to face with the realities and find that available output at current prices has outrun the demand.[3]

Speculative influences

This tendency to overexpansion as a result of watching price indexes is reinforced by the activities of speculative middlemen, who, scenting an upturn of prices, add to their inventories in order to reap the advantage of the price change. When they do this, they are bound to distort still more the picture which producers of commodities have drawn of the state of demand; for they convey

[3] The French economist Aftalion, who is an exponent of this aspect of the period of gestation, has compared the process to the time between kindling a fire and the moment when it begins to give heat. If one were guided purely by the thermometer (and not by experience), one would be led to alternate overheating and underheating of the room. When the thermometer was low, one would put on more fuel, and because the delay in getting heat keeps the thermometer low, one would add to the fire continuously. Eventually the heat would come and the temperature rise uncomfortably. As it remained high for quite a while, no effort would be made to keep up the fire, and it would eventually go out, leaving a cold house and the necessity of starting all over again.

See also the amusing illustration in J. M. Keynes, *Treatise on Money* (New York: Harcourt, Brace & Company, 1930), Volume II, p. 223.

the impression that ultimate demand has increased by the total amount of their orders, when in fact part of the increase represents only speculative dealings and not any net increase in the demand of consumers. This speculative demand ceases just as soon as the expectations of rising prices begin to appear unfounded. When prices begin to fall, it is replaced, as far as speculative dealers are concerned, with liquidation of inventories, and so adds a further weakness to the price structure.

There is a tendency also on the part of dealers or intermediary manufacturers, under the fear of scarcity of materials, to give more orders to manufacturers than they expect to be filled; and when this is done, a false sense of buying activity may be engendered which is given a rude shock when, later, dealers, as they must, cancel their excess orders.

Mutual generation of errors

We are now in a position to answer a question which has been lurking in ambush throughout this discussion—namely: Why is it that errors of forecast all move in the same direction rather than move now this way, now that, as one might expect? After all, the laws of probability would seem to indicate that errors would cancel out. If a producer makes an error in one direction, another producer should make an error in another direction. If producer *A* overestimates the demand, why does not producer *B* underestimate it? The one kind of estimate would seem as likely to occur as the other; and that being so, why should we expect a cumulative kind of error which alone could lead to a boom (or a depression)?

The reaction of producers to the gestation period throws light on the answer to this riddle. Errors are in the same direction for a very good reason. All businessmen tend to make the same error because all guide their operations by the same index—namely, the index of consumer prices. This index, throughout the period of gestation, persists in telling them to add to their production.

If businessmen watched another index, such as an index of productive capacity (were such an index available), or even if they kept their eye on the price index but watched it with that higher degree of skepticism which one would suppose the experience of previous booms would have sown in their minds, these cumulative and reinforcing errors, all in the same direction, might not occur.

Businessmen being what they are, and thinking, as they always do, in terms of price, this kind of excessive reaction to what was originally a small change in demand is held by theorists of the psychological school to be unavoidable.

There is still more to this situation of generalized error. Not only does generalized error tend to arise from a common reliance upon what really is, at the moment, a faulty index, but in addition to this, the emergence of an error in forecast in one quarter tends to cause similar errors in other quarters as well, and so on in a widening circle until whole areas of activity are being affected. In Pigou's language, what we have to deal with are "waves of optimism and pessimism" generated by the nature of human beings and the conditions of modern business life.[4]

Waves of optimism and pessimism

Businessmen, whether in the same or different occupations, are bound together by the invisible ties of social psychology. Optimism in one quarter of business tends to generate optimism in other quarters, particularly if the original burst of optimism is displayed by powerful business personages whose sentiments impose themselves readily on the mass of business "followers." Optimism, as Mitchell suggests, is really one of the social states of mind. One can be optimistic as an individual; in a crowd, it is vastly easier. The close contact among all businessmen that modern business life makes easy, the conventions, the luncheon clubs, and the cheer sessions, where optimism is deliberately developed—all these make common sentiment spread quickly. In good times, the wave of optimism eventually affects even that constitutionally cautious, not to say pessimistic, creature, the banker; and when this happens, the easier conditions which follow in the money market, the less forbidding aspect of banking officials found in financial institutions, make an even more favorable environment for the spread of optimistic attitudes of mind.

Furthermore, the actual operation of error for a while strengthens this optimistic sentiment by making it appear that everybody is right. If *A* overestimates the reasonable expectations which he should be entertaining, he puts more incomes in the hands of all those who work for him or supply him in any way; and this rising

[4] A. C. Pigou, *Industrial Fluctuations,* Chapter VII.

income increases the business of *B*, who, in turn, can afford to be optimistic, thus eventually increasing the income of *C* (and, of course, of *A* also), and so on in ever-widening circles.

A further cause of interrelated sentiment is the intricate debtor-creditor relation which is found throughout all business connections. Most business concerns are both borrowers and lenders. They get materials on credit; they sell them on credit to others. If, because of an excess of enthusiasm on the part of the producers from whom a concern buys its materials, it is able to get larger and longer credits, then it is more inclined to pass on the same concessions to its customers, to whom it grants in turn longer and larger credit. Thus good feeling is likely to pass on from one manufacturer to another, backwards, forwards, and laterally, each concern to some degree aiding in the good fortune of the others. By this financial interdependence, a generalized attitude of optimism, which makes for broad-scale increase of activity throughout the whole business system, is engendered.

As the psychological theorists see the matter, business is living, during expansion, in a state of great expectations, which however, being false, are obviously doomed to disappointment. Some day (the time being largely determined by the length of the gestation period for important processes of production) the truth is bound to come out. When it does, the whole airy fabric collapses. The dream is over; we wake to the unpleasant reality. The expectations of profit give way to fears of loss. Once this has occurred, the process of contraction, closing down factories, canceling orders, putting people out of work, and leaving productive resources idle or partly occupied sets in with increasing intensity.

Psychological influences in depression

The cumulative process of deflation and reduced activity characteristic of depression is essentially due to the same type of psychological influences that made the boom. The very magnitude of the boom, which is another way of saying the very magnitude of the optimistic error, tends to make an equally great excess of pessimism. The first check to business activity, brought about, presumably, by the disappointed expectations of some business concern, extends to all firms with which the former has business dealings. The long chain of debtor and creditor relations which made

possible the "mutual generation of optimistic error" now works in the other direction. Each concern that finds its own credit-obtaining capacity reduced reduces in its turn the credit it is willing to extend to others. If, to cope with this deflationary situation, business turns to the banks, it commonly finds that already the banks, sensitive as they are to turns of business sentiment and threatened moreover in their most sensitive place—namely, their reserves—are beginning to draw in their loans or, at least, to scrutinize requests more severely. This discovery adds to the universal spirit of pessimism.

If transactions have been heavily financed by borrowing, particularly if plant construction and other equipment activities characteristic of a boom have been financed by bond issues, the trouble is greatly increased. The pressure of debt payment induces despairing attempts to keep things going; to continue production by borrowing still more; and to hold off the inevitable price collapse by various devices for keeping up prices. This attempt must be futile in the end. When the inevitable collapse comes, it is accompanied by greater fall in price, greater restriction of production, more bankruptcies, and a more prolonged period of gloomy views and pessimistic attitudes; so much is this so that the reduction of activity is as much exaggerated in the period of depression as was the increase of activity in the period of boom. The period of gestation now works the other way. Just as it took time to get products ready for consumption, so it takes time to reduce all along the line the processes by which output is made available. During this period of reduction, the flow of goods is only gradually reduced. It cannot be shut off immediately. For this reason, prices continue to fall, and fall farther than they would fall were output reduction more speedy. In due time, however, the full effect of the reduction in activity at last reaches the ultimate market, and when that occurs, it becomes obvious that the reduction has been excessive. Demand was not so low as pessimistic views had estimated. By this time, stocks have been exhausted, and demand is actually incapable of finding satisfaction.

Thus the foundation is laid for another period of revival. Shrewd producers who have forecasted these events begin to make money. Prices begin to rise once more. Expansion is now justified. But once again the period of gestation makes quick expan-

sion difficult and so lays once more the train of causation which, as we have seen, generates the errors of optimism characteristic of booms. Thus the cycle is completed, and a new cycle begins.

Conclusion

Psychological explanations of cycles can hardly claim to be more than elucidations of one important factor in the process of expansion and contraction. The errors of forecast that they discuss could scarcely arise independently. Fundamentally, they are faulty reactions to "real" changes. Without the "real" change, the conditions necessary for the operation of error could not be expected to emerge. For this reason, psychological causes alone seem insufficient to account either for the beginning of a revival, after a period of depression, or for the crisis at the end of a period of expansion. Doubtless the crisis is caused by the realization of the extent of an error of forecast. Some particular event precipitates the trouble, such as a shortage of capital due to inadequate savings; or (from a contrary point of view) an insufficiency of consumers' demand due to excessive savings; or the limits of bank credit; or a scarcity of labor and its accompaniment in rising costs. Similarly, some "real" cause seems necessary to explain the revival after depression, a scarcity of consumers' goods, the effects of the application of invention, an influx of money, and the fall in the costs of production. The operation of these "real" causes furnishes the background for the emergence, once again, of the psychological factors, the atmosphere of optimism, in an area of uncertainty, and so prepares the way for the errors of forecast which lie at the heart of this type of theory.

One must admit the existence of these changes of confidence, of business "tone," of the general mental atmosphere or "climate." The annals of business history confirm this at every point. The writers whose theories we have examined in other chapters would regard these psychological manifestations as merely contributory factors in a process of expansion or contraction fundamentally produced by other causes, but the psychological theorists (embracing all those who put major emphasis on errors) raise these manifestations to first place in the scheme of causation.

12

MONETARY THEORY OF THE CYCLE[1]

THE MONETARY THEORY of the cycle is based on the following propositions:

1. That the known behavior of the cycle could not occur in the absence of an elastic money supply.

2. That the monetary supply of all countries with modern banking systems is elastic, i.e., capable of expansion and contraction.

3. That such expansion and contraction, when they occur, lead to cumulative expansion and contraction of industry and are sufficient to account for the business cycle, even if no other causes were present.

4. That the normal behavior of bankers is such as to cause them to bring about these contractions and expansions instead of controlling the monetary supply in the interests of stabilization.

5. That, therefore, the business cycle is essentially the result of

[1] The best-known exponent of a monetary theory of the cycle is R. G. Hawtrey, English economist, who has set forth his views in many books and articles. The following books may be consulted: *Good and Bad Trade* (London: Constable & Co. Ltd., 1913); *Currency and Credit,* 3rd Edition (London: Longmans, Green & Company, 1928); *Trade and Credit* (London: Longmans, Green & Company, 1928); *The Art of Central Banking* (London: Longmans, Green & Company, 1933); *Capital and Employment* (London: Longmans, Green & Company, 1937).

The student will find a systematic discussion of the relation of monetary factors to business cycles in A. C. Pigou, *Industrial Fluctuations,* Part I, Chaps. XII to XVII inclusive. See also W. C. Mitchell, *Business Cycles: The Problem and Its Setting,* Chap. II, Sec. IV, "The Monetary Mechanism," for an acute analysis of money as an active or passive force in cycles. For a more recent analysis of monetary factors in the cycle see Clark Warburton, "Quantity and Frequency of Use of Money in the United States, 1915–1945," *Journal of Political Economy,* October 1946; and "Full Employment Policies," *American Economic Review,* March 1948.

variations in the money supply produced by the banking systems of advanced industrial communities.

The necessity of an elastic currency

The most striking characteristic of the business cycle is the simultaneous fluctuations in the volume of production and the general level of prices. A period of expansion is marked by the concurrent increase of production and prices; a period of contraction, by their concurrent decrease. Yet this behavior is contrary to reasonable expectation. One would naturally assume that the increased volume of output would result in falling prices; the decreased volume, in rising prices. This outcome is precisely what would happen if the total monetary purchasing power of the community remained unchanged.

If the total purchasing power is constant, any increase in aggregate output must be accompanied by a lowering of the price level, just as any increase in the price level must be accompanied by a reduction in the aggregate level of production. In other words, with an unchanging purchasing power, either a general rise in prices or a general increase in production, but *not both,* could occur. In fact, as both occur in the typical expansion phase of a cycle, it would seem that the total purchasing power must have increased.

This proposition can be stated in terms of the familiar equation of exchange, $MV = PT$. In this equation, PT, the product of output and price level, undergoes alternate increase and decrease during the expansion and contraction phases of the business cycle. This change could not occur without a corresponding increase and decrease in MV, the product of the money supply and its velocity of circulation, which is the total monetary purchasing power of the community.

Carl Snyder of the Federal Reserve Bank of New York, after a study of American statistics, finds such a close relation over a period of years between the variations of velocity (V) and the volume of trade (T) that he is moved to hold that the change in price (P) is accounted for substantially by the variations in the money supply (M).[2] Professor Pigou, on the other hand, basing his con-

[2] C. Snyder, "New Measures in the Equation of Exchange," *American Economic Review,* December 1924.

clusions on English statistics, finds that the variations of money (M) more consistently parallel the variations of trade (T) and that the variation of prices (P) is primarily accounted for by the variations in velocity (V).[3] These opposite conclusions indicate how difficult it is to separate out the precise relations between the changes in M and V and the changes in P and T, respectively. At least it can be said that only a concurrent change in total monetary purchasing power, implying a concurrent change in both volume and velocity of money, can account for the actual increase in the monetary value of trade which is expressed in the product PT.

One may conclude that the behavior of the cycle is dependent upon the existence of an elastic currency, in the broad sense of a variable volume of purchasing power in use, and that, if this elasticity were not present, the changes in the price level so characteristic of the cycle could not occur. Were this elasticity not present, indeed, it is difficult to see how, except in the case of a reduction in costs of production due to technology, any expansion such as marks the prosperity phase of a cycle could get under way, for expansion must then be accompanied by a falling price level and be speedily brought up against sharp limits. As costs do not fall proportionately with prices, profits must contract, and whatever optimistic impulse may have started the expansion must surely fade away. It would be possible under an inelastic currency to expand production in one quarter at the expense of production in another, but the general business expansion that distinguishes the rising phase of the cycle could not occur. This consideration, however, is not important, since, as a matter of fact, the currency of the typical industrial community is notably elastic, in respect to both money supply and its velocity of circulation.

The elasticity of the money supply in fact

The monetary systems of most advanced industrial countries during the period in which cycles have been noted consist of bank deposits and paper money based upon a foundation of gold. If the supply has cyclical variations, they must be found either in the gold supply or in the superstructure of credit money.

1. Gold. Variations in the monetary gold supply of a country can arise from variations in the output of mines (if there are any),

[3] A. C. Pigou, *Industrial Fluctuations,* Part I, Chap. XV.

from changes in the proportions of gold going into monetary and industrial uses, and from variations in the import and the export of gold, this being, in turn, dependent on variations in the balance of international payments. Let us examine briefly these different sources.

Rationally, one would suppose that all these sources of gold supply would be subject to cyclical fluctuations. For example, a sudden increase of gold by discovery would start a rise of the price level. Then, as prices rose, the operative costs of gold mining encroaching on the fixed price at which gold is sold would make marginal mines unprofitable and gradually shut off supply. The rising prices would turn gold from the mints to the industrial market, where it would be worth more. With rising home prices, imports would tend to increase relative to exports, and gold would flow abroad to meet adverse balances. Thus all the sources of supply would work together to bring expansion to an end.

With the end of expansion, a period of falling prices, in which all the conditions would be reversed, would begin. Operative costs in gold mining would fall relative to prices and encourage marginal mining. The industrial market would be less attractive to gold than the fixed price of the mint. The falling prices would encourage exports over imports and would start an inward flow of gold. All this would reverse the trend once more, and so on in an endless cycle.

But the evidence reveals that these rational expectations are not borne out. Gold supply, at least in the United States, does not have these short-time variations; or, if they occur, they are of such small magnitude as to be of negligible importance. Significant short-time changes in the volume of gold, largely from importation, as in the period of 1915–1924, have occurred, but they have not been regular features of business cycles.

Gold mining is primarily speculative and not in any certain way connected with the level of prices. Discovery of new mines and new ways of working old ones may counteract high costs of mining, just as exhaustion of available veins may counteract otherwise low costs of mining. Capital scarcity in depression may be a restrictive factor even if costs are low, just as ease of raising capital in prosperity may be a stimulating factor even when other costs are high. In any case, the enormous size of the existing stock of

gold belittles the importance of changes in the annual output. With output averaging perhaps 3 per cent of the existing stock, only continued increases or decreases of output over prolonged periods are capable of exercising important influences over the price level. Hence they will cause not cyclical variations, but, if anything, long-period fluctuations such as have been observed by Kondratieff. As such they do, of course, influence the proportions of prosperity and depression over long periods of time.

Variations in the use of gold in the arts seem to follow rational expectations; but the total amount of gold involved (ordinarily about 1/4 of mined gold goes into the arts) is too small to make important effects over short periods of time. In severe depressions, where the discrepancy between the currency value and the industrial value of gold may be very substantial, large sums may be added to monetary gold by the process of diverting to the monetary use large fractions of mined gold and quantities of treasure, representing past industrial and artistic production, such as plate ornaments, temple roofs, crowns, and so forth. This diversion was spectacularly exhibited in the great depression, when gold released from hoards during the years 1931–1935 was estimated to have been equal to some two-years' normal output from all the mines of the world. Of course, this case was exceptional, encouraged as it was by the changes in the price of gold involved in the devaluation or depreciation of the various national currencies. Ordinarily, the amount added to monetary gold from such sources is of no great magnitude.

The effects of international trade on the movements of gold must be set down as quite uncertain. The movement of gold inwards toward the end of depression and outwards toward the end of prosperity implies a localization of the cycle which cannot be counted on. Furthermore, the movements of capital, which are oftentimes imposing in volume, and which more than any other item may determine the direction of gold flow, are affected as much by the state of confidence and the interest rate as by the price level, and may cause gold to move out in depression and in in boom. So complex are the various forces involved in these international movements that no simple and reliable statement as to the flow of gold in the various phases of the cycle can be made.

One may fairly conclude that gold is not to be relied on, in any

predictable way, to supply cyclical variations in the volume of money.[4]

2. Paper money. It might be thought that, since government paper money is under the control of a specific monetary authority, and not dependent, like gold, upon the relatively uncertain behavior of a multitude of mining companies, industrial users of gold and the possessors of gold stocks in other countries, it could have elasticity and that this elasticity might take the form of cyclical variations. The government could enlarge and contract the currency at will, and if it chose, make it expand and contract in conformity with the phases of the cycle.

But this possibility does not seem to be what actually happens. If the nation is on a gold standard, either the volume of paper money is fixed or some ratio of the gold supply, whose variations we have examined. If it is not on the gold standard, either the changes in the volume of paper money will be an emergency operation in time of urgent need, or it will be regulated so as to keep prices stable. In neither case will the supply of paper money be capable of being an active or passive cause of cyclical fluctuations.

3. Bank credit. The principal means of payment in modern communities is, however, neither gold nor government paper money, but bank credit, in the form of either notes or deposits subject to check. In the United States, deposits subject to check are of overwhelming importance, accounting on the average for probably 85 per cent of the total volume of monetary transactions.

Contrary to what we know about gold or government paper money, bank credit, particularly deposits subject to check, does have the kind of elasticity which facilitates cycles. It can be readily increased and diminished; and the evidence shows it to be subject to cyclical variations. When the statistical data of bank deposits or of bank loans and discounts (either of which is a fair measure of bank credit) are corrected for trend, there is unmistakable evidence that the resultant figures have cyclical fluctuations which correlate closely with indexes of industrial activity.[5]

The total volume of available bank credit is some multiple of

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[4] Mitchell, *Business Cycles,* pp. 119–121.

[5] Cf. A. C. Pigou, *Industrial Fluctuations,* Part I, Chap. XIII, and W. I. King, *Causes of Economic Fluctuation* (New York: The Ronald Press Co., 1938), pp. 153–157.

the reserves. It can be increased or decreased by varying the reserves legally or conventionally required to be carried or, even though the reserve ratios are kept constant, by increasing or decreasing the volume of available reserve money (gold or credit at central banks). If reserves were always required to be 100 per cent (as some reformers now advocate), the variation of bank credit could be only the same as the variations in available reserve money. In this event, banks could, for example, increase bank credit only by importing gold from abroad, or receiving gold from circulation (if gold were legally permitted to circulate), or by acquiring, through rediscounting or borrowing, additional reserve credit from the central bank.

If fractional reserves were permitted, as is the most common procedure in bank systems, but by custom were kept substantially at a fixed percentage of deposits—say, 10 per cent—then variations in total available credit would have to be brought about by the same alternatives as with 100 per cent reserves. But any change in reserves would make possible a multiple expansion of deposits. If reserves were kept at 10 per cent, deposits would be increased tenfold for every increase in reserves. A small change in reserves makes possible a large change in deposits.

When fractional reserves are permitted, banks are left free to carry varying fractions (as long as they satisfy minimum requirements). Hence, not only may the total deposit credit vary in proportion to every change in available reserves from any of the three sources (gold import, inflow of gold from circulation, and increase of reserve credit at central banks), but also it may vary in inverse proportion to every change in the actual reserve proportions that the banks in fact maintain. Thus if, in depression, because of low demand for loans on the one hand, and the banks' urge for liquidity on the other, bank reserves are 20 per cent and, in the return of the demand for loans and of bank confidence, are allowed to fall to 10 per cent, bank credit can be doubled with no increase whatever in the absolute volume of reserves in the possession of the banks.

If with variable fractional reserves, which in themselves permit wide variations in the total of bank credit, is coupled a willingness of the central bank to increase or decrease the amount of available reserves to the credit of the banks, then the maximum variability

of bank credit is attained. This willingness is made effective by lowering or raising the rate of discount, or by purchase and sale of securities in the open market, the results of which are to increase or decrease the total of central bank credit in the possession of member banks.

Degrees of variation in bank credit. The degree of variation in the supply of bank credit, and hence of the total supply of money in most advanced countries depends, therefore, on what combination of arrangements is in force. The 100 per cent reserves for member banks, coupled with determination on the part of the central bank to control the volume in the interest of stability, would reduce the variations of bank money to their smallest proportions. At the other extreme, variable fractional reserves for member banks, coupled with willingness of the central bank to vary the available volume of reserve money in the interests of elasticity, would give the variations of the bank money their greatest range.

The actual degree of flexibility in the volume of bank deposits would, of course, vary from country to country. An interesting contrast can be made between Great Britain and the United States.

In Great Britain, although fractional reserves are neither required nor sanctioned by law, practice has made them the normal procedure for the joint-stock banks. Moreover, in practice they have been maintained within quite narrow limits. As Keynes points out, the banks find large reserves unprofitable and smaller reserves imprudent. Still further, along with these fixed fractional reserves has come a custom of not borrowing at the central bank. The central bank, on its part, has had the custom, in the past, of avoiding open-market operations such as would increase or decrease the reserves of the joint-stock banks. In these circumstances, the variations in bank credit have come largely from the flow of gold into and out of the country and out of and into circulation. These practices tend to reduce somewhat the variations of bank credit as a whole; although even then, because of the volume of gold in circulation and the importance of Great Britain as a world trading and financial center, the fluctuations in bank credit have been substantial.

In the United States, on the other hand, especially after the advent of the Federal Reserve System, with its stress on the elasticity of the currency, circumstances seem to have made possible the

maximum variability of bank deposits. The banks have fractional reserves that, in practice, have had wide variations above the minimum required by law. With the advent of the Federal Reserve System, the banks were encouraged to rediscount when in need, and the central banks were prepared to buy securities in the open market, if necessary, to find an outlet for their idle funds. The professed aim of the Federal Reserve Act of 1913 was to establish an elastic currency—that is to say, a bank currency capable of expansion and contraction. The actual arrangements of American banking seem to have satisfied this aim in the highest possible degree.

4. Velocity of circulation. Snyder's investigations indicate that velocity of circulation of bank deposits (the principal currency) in the United States, while showing no trend (no tendency over long periods to either increase or decrease in the average), does have marked cyclical variations, which, as noted above, are strikingly similar to the variations of trade. Keynes, after a careful examination of the English evidence, concludes that the velocity of deposits increases in good times, decreases in bad; and that this is indicated both by statistics and by rational analysis. In good times, the rise of interest rates and prices increases the sacrifice of holding cash balances and impels everybody to lend funds or buy commodities; the opposite occurs in bad times.[6]

Randolph Burgess gives similar evidence for the United States. Tracing the variation of the velocity of bank deposits in various cities from January 1919 to February 1923, he finds velocity rising above average in prosperity, falling below in depression; the range of variation away from the average being as high as 68 per cent for Albany and as low as 22 per cent for Chicago.[7] Similar indexes for 140 cities outside New York City for the period 1927–1933, based on 1919–1925 as 100, show the following yearly averages.[8]

1927	107	1931	88
1928	115	1932	78
1929	128	1933	74
1930	107		

[6] J. M. Keynes, *Treatise on Money* (New York: Harcourt, Brace & Company, Inc., 1930), Vol. II, Chap. 24.

[7] R. W. Burgess, "The Velocity of Bank Deposits," *Journal of American Statistical Association,* June 1923, pp. 727–740.

[8] Federal Reserve Bank of New York, *Monthly Review.*

J. W. Angell's measures of the velocity of the total money stock reveal decidedly narrow cyclical fluctuations around a nearly horizontal trend. In the period 1899–1929, velocity fluctuated around an average of 3.00 per year (range 2.72 to 3.35). And in the period 1933–1938 (after a heavy fall 1930–1932) velocity fluctuated around an average of 2.19 (range 2.00–2.29).[9]

It is probable that the variations in velocity of circulation, which seem to indicate an elasticity in this field independent of the elasticity of the money supply, are, however, not really independent. As Pigou has pointed out,[10] they are induced rather than autonomous, being brought about by the effects of changing price levels and the subsequent changes in business expectations —that is, they are themselves secondary consequences of the price changes brought about by changes in the supply of money. True, they have further effects of their own, but, being themselves produced by monetary factors, they must be regarded as of secondary importance.

Fundamentally, therefore, the elasticity related to the business cycle is the elasticity of the money supply which, in modern industrialized communities, is substantially equivalent to the elasticity of bank credit.

Hawtrey's monetary theory of the cycle

We must now show how the potential elasticity of bank credit becomes a reality and how monetary theory relates it to the fluctuations of the business cycle. This demonstration can best be made by following the argument of R. G. Hawtrey, who enjoys the reputation of adhering most uncompromisingly to a purely monetary explanation of the business cycle (or trade cycle, as English economists call it).

"Variations in effective demand," says Hawtrey, "which are the real substance of the trade cycle, must be traced to changes in bank credit." Or again, "The trade cycle is a monetary phenomenon, because general demand is itself a monetary phenomenon."

[9] J. W. Angell, *Investment and Business Cycles* (New York: McGraw-Hill Book Company, Inc., 1941), pp. 141–142 and Appendix II.

[10] Pigou, *Industrial Fluctuations*, Part I, Chap. XV, Section 8. Clark Warburton (op. cit.) holds that changes in velocity are factors of intensification rather than originating elements in major business cycles.

First we must familiarize ourselves with some of Hawtrey's definitions:

The *consumers' income* is the total of incomes expressed in money.

The *consumers' outlay* is the total of money payments made out of income including investment. It is the most important of all concepts, for it constitutes the effective demand of the community. (Some money receipts, such as gifts, sale of capital assets, and so forth, are not counted as income and hence not as outlay if expended.)

Cash balances are the holdings of the community in cash and bank deposits; they are the sum of the balances of consumers and traders (traders being all who carry on business for profit).

The total cash balances = the *unspent margin* = the total monetary supply of the community. This total cannot be changed save by the increase or decrease of bank credit or by the import or export of gold. Individual cash balances can change by shifts from one to another.

Velocity of circulation (income velocity) is the ratio of consumers' outlay to cash balances in a given time.

1. The phase of expansion. The effective demand for commodities is constituted by the total money outlay of consumers. This money outlay is determined by and, barring changes in cash balances, tends to equal the money income of the consumers, which is the total money income of the community. Outlay is less than income when balances are being increased and greater than income when balances are being diminished. In equilibrium, consumers' outlay equals consumers' income; consumption equals production; the cash balances of consumers and traders are being neither increased nor diminished; the banks are neither increasing nor diminishing bank credit; and there is no net export or import of gold.

Hawtrey regards this situation as one of extremely delicate balance, which can be disturbed by any number of causes, and, when disturbed, tends to move into a transitional period of cumulative disequilibrium. Thus an expansion can be originated by an increase of gold from abroad, an increased inclination on

the part of traders to increase their stocks of goods, an increased inclination by consumers to spend and release cash, an increased willingness by banks to make loans and so put funds into the hands of the community, and so on. Of all these possibilities, the increase of spending by consumers out of their balances is the least probable. Consumers' balances are so much a matter of deep-seated habits that once established at certain proportions of income they are not likely to be changed, especially in short periods. It may fairly be agreed that increased consumers' outlay is commonly the result of increased income. The release of cash by traders and the increases of bank credit by bankers are another story. Any improvement in expectations will cause traders to increase their purchases of commodity stocks (enlarge their working capital). Any increase in their reserves or any feeling that existing reserves may safely be decreased causes bankers to seek to increase their loans and lower their rates of discount in order to do so. These lower rates of interest increase the borrowing of traders, particularly for the purpose of adding to working capital, for interest changes are the principal expense in respect to working capital, and changes therein quickly encourage or discourage investment, as the case may be.

Now in each of these instances, the consumers' outlay is likely to be increased. If consumers release cash, their outlay is increased directly. If banks release cash, which is commonly done by increasing loans to traders and so increasing traders' expenditures, or if traders release cash on their own initiative and so move their idle deposits more freely into circulation, consumers' income somewhere in the economic system will be increased; this will be an increase in the aggregate money income of the community, not merely a transfer of income from one group to another. Doubtless, it cannot be assumed that this increase of consumers' income must infallibly increase consumers' outlay. The increase might be added to cash balances instead. Conventional attitudes toward cash balances being what they are, Hawtrey assumes that the increased income will be largely spent and so become a source of increase in effective demand.

Cumulative consequences. Now this increase of effective demand on the part of consumers sets up a cumulative process of expansion in which more and more cash is released by traders and

by banks, and more and more additions are made to consumers' income and outlay. Traders, who have released cash to add to their stocks of goods, find that the increased demand by consumers, thus set in motion, has reduced their stocks again and so frustrated their intentions of expansion. They will be moved, therefore, to order still more from the producers and continue to do so until they succeed in getting and holding the additional stocks they regard as appropriate.

As they do so, they must eventually use up their idle balances and be compelled to arrange loans at banks, which the banks (under the circumstances of increased velocity, and assuming adequate reserves) would be quite willing to grant. This credit increases the total money income still more ("When the banks lend, they generate income."), and again, barring an improbable increase in idle balances, increases also the consumers' outlay.

At some stage in this process, probably early if the start is from equilibrium, the general level of prices rises. There are places where output cannot readily be increased, labor is scarce, or the plant is temporarily at capacity. There prices rise, and a general rise gradually sets in. The general rise of prices adds still further to the forces of expansion. The lag of costs caused by the relative rigidity of wages and interest increases the profits of entrepreneurs and makes them willing to borrow still further from banks. The increased monetary value of output increases the demand for credits to finance its production. It becomes less advantageous to hold balances, and an increase in the velocity of circulation of the money supply takes place, which adds still further to the expansion of effective demand and the rise of the price level.

Why the expansion ends. Now this process of enlarging the money income and outlay, with its concurrent expansion in output, goes on just as long as the banks are willing to add to income by expansion of credit. Even after industrial capacity has been reached, and further increases of credit mean nothing but inflation, the process of monetary expansion could go on if the banks were willing to abandon the gold standard and if society were willing to endure the growing friction between economic classes involved in continuous inflation. In practice, this expedient has been resorted to only in the great economic disruptions of war and postwar periods. Ordinarily, the gold standard is not aban-

doned, and when this is the case, the inevitable though delayed shrinkage of the cash reserves of banks forces an end to the period of expansion.

With the rising monetary volume of transactions and the increased monetary income and outlay of consumers, there sets in, at first slowly, then with increasing force, a drain of cash out of banks into circulation. Consumers want more cash in hand; merchants want more cash in tills. Payrolls involve more cash withdrawals. There may be an increase of imports over exports and a flow of gold abroad. This flow of cash out of the banks at a time when their deposit liabilities have been increasing endangers their conventional reserve ratios and leads them to put brakes on borrowing, primarily by raising their rates of discount. Unfortunately, this action comes too late. Had they raised their rates earlier in the expansion and raised them high enough, and had they taken warning from the increase of consumers' outlay, they might have kept the expansion within bounds. Since they were keeping their eyes fixed on their reserve ratios, they were bound to act too late. The depletion of reserves is almost the last of the series of changes which mark the expansion. Increased credit, increased consumers' income and outlay, rising prices, and, at last, drain of cash and of reserves is the normal order of events. Because of this condition, when banks are at last moved to act, the expansion has gone so far that any check sets up a drastic and cumulative reaction.

2. *The phase of contraction.* The contraction which follows, like the preceding expansion, is a function of the change in effective demand. The restrictionist policy of banks and the high interest rates discourage dealers from investment in commodity stocks. As a result of reduced orders, producers are less busy, and income paid out by them falls off. Thus begins the first contraction of the consumers' income. Unless consumers now draw on their balances, which they may do for a brief period but not for long, consumers' outlay and effective demand also contract. Traders find stocks left on their hands and contract their purchases still more. Many use the opportunity to pay off bank credit, thus reducing the sum total of money. All of these things bring down the price level and, with it, profits. With the prospects of falling prices, balances are held unspent and the velocity of the money supply falls, weakening prices even more. As the monetary vol-

ume of output falls, the volume of credit needed to finance it is reduced, and loans are still further reduced. In short, effective demand for goods has collapsed.

In the meantime, the forces that will halt the decline get under way. The fall in bank credit begins to ease the position of banks, and as depression proceeds and the low volume of trade and of prices reduces the need for cash, there sets in a return flow of money to the banks. First merchants and dealers and then, after they have overcome their early fear-induced tendency to hoard, the consumers, return cash to the banks. If the slump has not been international in scope, exports will have increased over imports, causing an inflow of gold. All this takes time, it is true, but once begun, the flow to banks continues increasingly, and this flow, with the low levels of deposit credit, substantially increases the reserve ratios and moves the banks to more liberal attitudes to borrowers. In industry, costs have been gradually falling, stocks of goods are at a low ebb, and with the lowered rates of interest now ruling, the way is open for revival. Once more the situation is favorable to an increase of investment by dealers, and, once they start, consumers' income and outlay begin to rise once more, and the whole process of expansion is ready to be repeated.

Such, in brief, is Hawtrey's account of cyclical behavior. To his mind, this behavior is fundamentally a monetary phenomenon. He does not deny that nonmonetary causes (such as invention, discovery, increases of crops, and so on) may affect productive activity, but he holds that they can affect general productive activity as compared with the activity of particular industries, only through their monetary effects. Nonmonetary causes have no periodicity; the periodicity that appears in trade cycles is due to their monetary effects, and even these could be removed by appropriate banking policy. The actual behavior of cycles is due to cumulative variations in bank credit, produced by an elastic currency and a banking policy based too rigidly on the state of reserves. It would not exist were the money supply inelastic, or were an elastic supply subject to rational rather than conventional control.[11]

[11] Hawtrey holds that there has been no trade cycle since the First World War. The periodicity that distinguishes it has gone. The fluctuations that have occurred are spasmodic, and with no marked international relationships. This is due to the disappearance of the gold standard system on whose behavior prewar cycles were founded.

Why do banks permit instability?

One might, therefore, ask the question: Why do not banks exercise this rational control? Merely that bank credit is capable of elasticity does not mean that it must have elasticity. It would seem quite possible for banks to change their methods, even to the point of maintaining a fixed volume of credit facilities irrespective of the demands of trade. At the least they could adopt policies making for stability rather than fluctuation; indeed, self-interest would seem to demand it. Why do they not do so?

1. To this question bankers are likely to answer that it is their business to supply the needs of trade, not to control the volume of money. It is not for the banks to decide how much credit the business community is to have. This job belongs to the business community itself. The banks are the servants of the public. It is their business to supply bank credit, within their capacities, when it is wanted. They increase credit facilities (for worthy business, to be sure) when it is wanted, and reduce it when business wishes to pay it off. They stand ready to serve at all times, and, if there are fluctuations of business, then business is to blame, not banking.[12]

This notion of the passive (and blameless) banker is, however, not commonly held save by bankers, and not even by all bankers. Common sense would reject this passive idea of the banker's behavior. He is not passive; neither is he blameless. It is his specific policies which actively generate the cycle. He leads, rather than is led. He could have chosen other practices that would have mitigated cycles. He has not chosen them. There must be other reasons than pure passivity.

2. The more probable situation is that the banks would like to prevent these fluctuations as much as anybody else, but are unable to do so in the face of the realities of profit-making competitive banking. It is not so much that they are averse to control as that they are not in a situation to exercise any.

Consider what happens in expansion and contraction. Banks, like other private concerns, are in business to make a profit and, if they are run rationally, to make as much as they can. They

[12] See J. L. Currie's discussion of the "commercial loan theory" as compared with the "monetary theory" of banking. *The Supply and Control of Money in the United States* (Cambridge: Harvard University Press, 1934), Chap. IV.

wish to maximize their profits, and they assume that this is appropriate economic behavior. To do this, they must keep their funds invested in earning assets up to the limit dictated by prudence, convention, or legal regulation. If reserves are above the minimum, then the banks are not earning so much as they should; if near or below what safety dictates, then they are earning too much and should convert earning assets into cash. In all cases, they try to keep that precise combination which will maximize earnings and safety.

If, now, in a period of expansion, due to incoming cash, or improved prospects of business, or other reasons, banks are in a position to expand loans (and some do), then it is quite impossible for other banks, even though they do not favor expansion, to resist the movement. Banks that do resist will find themselves with idle and excess reserves, as the proceeds of other banks' loans to some extent find their way into their hands. If, then, they refuse to add to their credit facilities, not only will they fail to behave as rational bankers seeking to maximize profits, but what is worse, they will see their customers go to those who take a more liberal attitude. Therefore, willy-nilly, they join the procession even though they disapprove in general. Thus each is dominated by the pace of all; and so, like a remorseless juggernaut, the whole array moves on to the point of inevitable break.

Similar circumstances prevent any bank from stopping a decline. Those who persist in lending when others, more timid, have begun to close down on loans will find their reserves shrinking as adverse clearing balances begin to operate. Therefore, they, too, are compelled to be more stringent in their attitude, and thus one bank after another joins the general reduction.

What happens here is what happens so often in our individualistic economy. No one can afford to do what it is in the interest of all to have done. Each one holds off, knowing that, if he acts alone, he can only bring about his own downfall. As a result, all go on to engender an expansion or contraction that all deplore.

One might even go so far as to say that the bankers do not even know or notice what is going on. Once expansion is started at any place in the banking system, every bank tends to share to some extent in the additional deposits, as checks are deposited here and there in the system; and once this happens, "mere adherence to

the routine of banking technique," as Keynes puts it, causes them to follow the originators of the expansion and expand their own credit facilities likewise.

3. This situation holds for competitive banks, but it does not hold for central banks. They are not competitive; they would seem to have adequate powers of control over the money market. Why have they not acted to prevent instability?

Hawtrey would say that it is because they consistently use the wrong methods. It is not because they have no credit policy, or let credit take care of itself. They have a credit policy and systematically counteract any activities that clash with it. Unfortunately, it is the wrong one. They determine credit expansion and contraction by the state of the reserves; and this is fatal. As Hawtrey puts it,

> So long as credit is regulated with reference to reserve proportions, the trade cycle is bound to occur. The flow of legal tender money into circulation and back is one of the tardiest consequences of credit expansion and contraction. If the central bank waits for the flow to affect its reserves, and sits passively looking on at an expansion or contraction gathering impetus for years before it takes any decisive action we cannot escape from the alternations of feverish activity with depression and unemployment.[13]

Some hold that this view of central banking is mistaken and that the reason why banks have been so ineffective in controlling the creation of credit is not to be found in their excessive preoccupation with reserves, but lies in a quite different quarter. The root of the difficulty is to be found in the "inflationist ideology" which dominates the central banking authorities. The reason why banks continue to make the mistakes they do, according to L. von Mises, an eminent German monetary authority, is "because the prevailing ideology among businessmen and politicians looks to the reduction of the interest rate as an important aim of economic policy, and because they consider an inflationary expansion of credit the best means to obtain their objective." "The root cause of the phenomenon that one business cycle follows another is thus of an ideological nature." [14]

[13] R. G. Hawtrey, *Monetary Reconstruction* (New York: Longmans, Green & Co., Inc., 1926), pp. 144–145.

[14] G. von Haberler, *Prosperity and Depression* (Geneva: League of Nations, 1937), p. 60. See also H. S. Ellis, *German Monetary Theory* (Cambridge: Harvard University Press, 1934), pp. 334–336.

Only the central banks are thus affected. Commercial banks could never bring about a dangerous inflation on their own; only the willing aid of central banks makes this possible. Central banks, not the others, are the real inflationists, and they inflate because the community, thinking in terms of easy money and believing that more money is more capital, wants them to inflate. Central banks are not independent. In the last analysis, they are subject to political control. Politicians, reflecting public sentiment, including business sentiment, are inflationists at heart. In this view, the Federal Reserve System of the United States, devoted to the principle of an elastic currency, and a powerful agent of inflation, reflected, when it was set up, the wishes of the community rather than a scientific attitude toward banking.

As long as this situation holds, cycles are inevitable. Credit expansion is chronic, leading again and again to crises and depressions, and, after each depression, to inflation once more.

Summary

Monetary theorists hold that cycles, as compared with other variations in economic activity, are brought about by the elasticity of bank credit. They hold that expansion and contraction of bank credit are not only a necessary accompaniment of similar variations in economic activity but are an efficient cause thereof. They hold, further, that this is not a necessary condition of banking, but that it has been brought about by the traditional practices of bankers, under the gold standard. These practices are dictated by the general interests of the banks and are such as will make the best combination of profit with security. This combination is secured by maintaining the largest possible volume of deposits justified by the state of the reserves; and the attempt to secure it makes the state of the reserves the key to decisions. Under these circumstances, not only are expansions checked when reserves reach levels conventionally regarded as minima, but the slowness with which reserves are reduced make such expansions dangerously large and certain to lead to cumulative contractions.

The confirmed monetary theorist like Hawtrey is prepared to argue that an intelligent bank policy designed to maintain stability of the price level would not merely reduce but abolish cycles. This type of theorist holds that, although all sorts of fluctu-

ations in business would occur, produced by the constantly varying state of demand, costs, and so on, these would not take a cyclical pattern. There is absolutely nothing cyclical in their occurrence. It is only the flexibility and instability of bank credit which seizes on these fluctuations and turns them into rhythmic changes. Abolish the instability of bank credit (by proper bank policy) and cycles will disappear.

Some objections

How acceptable the monetary theory of the cycle will be depends on what it is taken to mean. If it means that the cycles that actually occur, and in the shape in which they occur, cannot be explained in the absence of monetary factors, probably everybody would accept it. It is an indispensable contributing cause, a *sine qua non* of cycles as we know them. Whatever else happens, the compliance of the banks must be assumed.

Further, if the theory implies that the monetary factor is not merely a passive but an active factor, that monetary movements are not merely "necessary but sufficient conditions of the observed phenomena of the cycle," [15] then one must be prepared to make a fairly broad interpretation of what a monetary factor is, and also to hold nonmonetary forces incapable of causing cumulative alternations of expansion and contraction of activity. Thus, for example, is velocity of circulation a monetary factor? There is no doubt that it has important variations which spring from nonmonetary sources—that is to say, from the changing attitudes of both consumers and producers and not from the decisions of a monetary authority. These variations might cause alternations of effective demand, even in a purely cash economy, with no bank credit to give elasticity of money supply. If one chooses, with Hawtrey, to regard velocity as a monetary factor, it is undeniably easier to think of the cycle as "a purely monetary phenomenon," [16] but it might be more illuminating to regard velocity as the expression of the many nonmonetary factors, changes in real demand

[15] See Hawtrey's precise statement in "The Monetary Theory of the Trade Cycle," *Quarterly Journal of Economics*, Vol. 41, May 1927, p. 472.

[16] Cf. discussion between Hawtrey and Pigou, *Economic Journal*, December 1928, pp. 636–643.

changes in cost, inventions, and so on which, too, may be powerful contributors to cyclical fluctuations.

The validity of the monetary theory can be tested by the effectiveness of the controls which banks might exercise over variations in activity. Theoretically, banks are in a position to remove what is claimed to be the essential cause of cycles. Experience shows that the problem is by no means easy. It is not always possible to put an early end to a boom where powerful nonmonetary influences, such as a wave of investment, are at work. Even high rates of discount and continued pressure on the market may not be effective. To end a depression is even more difficult. Dear money may end a boom; cheap money does not by any means end a depression. Even though the monetary factor may be an active and powerful one at the end of prosperity, it is apt to be a discouragingly passive one at the end of a slump. Something else may be necessary to induce recovery, factors which are fundamentally nonmonetary in nature, even though they express themselves in monetary forms.

These considerations suggest that the monetary theory is not always "sufficient" to explain the phenomena of the business cycle; and that other explanations will have to be given consideration. The next chapter, however, concerns what is commonly classified as a monetary theory of the cycle; but it is not a purely monetary theory and is properly described as a monetary overinvestment theory. It finds the ultimate cause of cycles in the instability of bank credit but traces the consequences of this, not through the variations in consumers' outlay, but through the changes in the volume of investment—that is, the purchase and production of capital goods.

13

MONETARY OVERINVESTMENT AND THE STRUCTURE OF PRODUCTION

THE MOST STRIKING feature of the business cycle is the extraordinary variation in the production of capital goods—that is, buildings, machinery, and other instruments of production. No explanation of the business cycle can be regarded as adequate that does not account for the fact that the production of capital goods fluctuates so much more violently than the production of consumption goods.

An objection to the purely monetary theory of the cycle which Hawtrey so vividly develops is that, although adequate to account for the ebb and flow of production in general, it does not explain the disproportionate variation in the production of capital goods. Indeed, there is nothing in the purely monetary theory to indicate that this extraordinary variation has any particular importance.

The theory that we shall now examine seeks to remedy this defect. It is a monetary theory in that it finds the cause of disturbance in the elasticity of bank credit; but it is more than a mere monetary theory in that it tries to trace the connection between the recognized behavior of the credit system and the equally recognized distortions in the two chief classes of output. It may be referred to as a monetary overinvestment theory. Its best-known exponent is F. A. Hayek, whose statement of the theory is largely followed in this chapter.[1]

[1] See F. A. Hayek, *Prices and Production,* Revised Edition (London: George Routledge and Sons, Ltd., 1935), and *Monetary Theory and the Trade Cycle* (New York: Harcourt, Brace & Co., 1933). See also his essay "Price Expectations, Monetary Disturbances and Malinvestments" in *Readings in Business Cycle Theory* (Philadelphia: The Blakiston Company, 1944). The student will find a lucid brief statement of this theory in L. Robbins, *The Great Depression* (New York: The Macmillan Company, 1934) Chap. III.

The structure of production

At any given time, the resources of the community devoted to production are arranged in a number of "stages." Some of these stages are remote from the consumers and may be called the "higher" stages of production. In these stages, raw materials are being produced, equipment manufactured, buildings constructed. In short, here is being turned out our supply of capital or producers' goods. Other stages are nearer to the consumer and may be called the "lower" stages of production. There are being produced the consumers' goods that are the final object of all the previous preparation. There may be many stages of production from the nearest to the most remote. Together they constitute what Hayek calls the "structure of production."

The shape of this structure of production is, of course, not capricious. It depends very definitely on the decisions of the community in regard to the distribution of its income between saving and spending. To the extent that the community decides to save, it indicates its desire that resources are to be put to work (that is, invested) in the "higher" stages of production devoted to the production of capital goods and the provision for the future. If it decides to spend, it indicates to that extent its desire that resources be put to work in the lower stages of production, adding to the supply of consumable goods. If the economic system is working rightly, therefore, the shape of the structure of production, particularly the number of stages between the earliest production and the final output of consumers' goods, should correspond with the spending-saving decisions of the community. Indeed (at least, in the long run), this correspondence is precisely what occurs, and what makes it occur is the operation of that extremely important factor in our economic system, the rate of interest.

The importance of the rate of interest

When people divide their income stream into the two alternative channels of spending and saving, that which is spent goes directly into the purchase of consumers' goods, but that which is saved does not go directly into the purchase of capital goods. Immediately, the flow of savings goes into the capital market and

finds its way into the hands of banks, insurance companies, dealers in securities, and other financial institutions. Through them, it is put in the hands of entrepreneurs of all kinds, and finally used by the entrepreneurs to finance the production of the capital goods, for which it was designed. This process may be called "investment." The function of the rate of interest is to bring about equality between the flow of savings and the investments of the entrepreneurs, and, if it is working properly, it will tend to reach that level which will equalize the supply of and demand for this fund of savings. This level may be called the "natural rate of interest" or, alternatively, "the equilibrium rate of interest." A higher rate than this elicits more savings than can find investment; a lower rate causes more demand from entrepreneurs than current savings can satisfy. Either situation sets up such changes in the relation of the supply and demand for loan capital as will tend to restore the equilibrium position.

If, now, the rate of interest is working effectively, changes in the volume of saving, relative to spending, should be followed by equivalent changes in the volume of production of capital goods relative to the volume of production of consumption goods. If the volume of saving rises, the interest rate should fall, and more resources should be devoted to capital goods production and less to consumers' goods production. Conversely, if the volume of saving falls, the rate of interest should rise, and less resources should be devoted to capital goods production and more to consumers' goods production. That is to say, changes in the relative volume of saving and spending tend to bring about appropriate changes in the structure of production.

Moreover, there seems to be no reason why this process should not be brought about without any more than the usual friction involved in transfer of resources within the economic system. If it is possible for changes to take place in the demand for and supply of various kinds of consumers' goods without serious cumulative disturbances (and there seems to be no evidence that the necessary shifts do not proceed with reasonable smoothness), then the presumption is that shifts from consumers' goods to producers' goods, or *vice versa,* can be brought about with equal smoothness. Why should shifting of resources from one stage of the economic process to another be more difficult, or cause more re-

percussions, than a shift of resources from industry to industry at the same level of production? To put it in other words, why should vertical shifts be more difficult than horizontal shifts, and "vertical maladjustments" in the structure of production occur more readily than "horizontal maladjustments"?

Why vertical maladjustments occur

Hayek holds that there is no reason, save one, why such discrepancies should be. That reason is the behavior of the banking system. This behavior springs from the dual nature of banking, for banks have two functions: they act as middlemen between savers and investors—that is, between the supply of and demand for capital; and they supply the principal means of payment in modern communities—bank credit. If the banking system is working properly, the middleman function should bring about continuous equilibrium between the volume of savings and the volume of investment. There should be no savings that do not find investment; no investment in excess of savings. This equilibrium would actually come about were it not for the interference of the monetary function.

If the money supply were fixed, savings would be the only fund from which investments could be made, and the mere pursuit of maximum profits would lead banks to see that all savings found their way into investment. When the money supply is elastic, investment can be increased without any increase in saving, and diminished although saving has not changed. If the market rate of interest were held below the equilibrium rate, business borrowing would be encouraged, an increase of bank credit would be brought about, and investment would rise above savings. This process would continue as long as the rate of interest remained "low." Similarly, if the market rate were raised above the equilibrium rate, investment would fall below savings and remain below as long as the market rate were kept "high."

Hayek attributes this elasticity of bank credit to the ability of the banks to raise and lower the volume of deposits relative to their cash reserves and to the nature of the competitive bank system, which compels every banker to keep in step with the others. Because of this, banks are at some times increasing and at other times diminishing their deposit currency, without rela-

tion to the volume of savings which the public has put in their possession for investment. Thus, via the elasticity of bank credit, there emerges a means whereby investment can vary independently of savings, and it is this variation which, in the monetary overinvestment theory, accounts for the phenomenon of the cycle.

The theory of overinvestment

We will now examine this theory more closely, following Hayek's analysis of the course of events set in motion by changes in the rate of saving and investment.[2]

Hayek begins his analysis by assuming that the economic system is in equilibrium. He regards the business cycle as a disturbance of equilibrium, and the phases thereof as departures from the equilibrium position. This assumption means that there is, at the moment, no force making for disturbance or unavoidable adjustment. The rate of interest is such that savings are finding their way into equivalent investment; the structure of production is adjusted to the proportions in which the national income is divided between spending and saving; and there are no unemployed resources, save the unavoidable minimum due to incapacity or friction involved in change from one use to another. The assumption of unemployed resources is justified on the ground that unemployed resources are not consistent with equilibrium. They imply that there are appropriate reductions in wages, interest, or rent capable of eliminating unemployment of resources, which have not yet been made; that is to say, that equilibrium has not yet been reached. The assumption is important because it means that, at equilibrium, increase of output in one field of enterprise must be at the expense of output in other fields of enterprise; and particularly that any increase in the production of producers' goods *must* be at the expense of the production of consumers' goods, and *vice versa,* which is another way of saying that disturbances of equilibrium must modify the structure of production.

Voluntary changes in saving

Suppose that consumers decide to save a larger proportion of their incomes. This will lower the rate of interest, increase the

[2] See Hayek, *Prices and Production,* Lecture III.

profitability of all production for the future, and encourage borrowing for capital purposes. If concerns that have been borrowing at 5 per cent can now borrow at 4 per cent, they can afford to pay 25 per cent more for all their capital goods and borrow accordingly. Concerns that have been investing in instruments of 20-years' life (for the value of a capital good at 5 per cent interest is 20-years' purchase) can now invest in instruments of 25-years' life. The new rate of interest raises the value of capital goods in proportion to their length of life and encourages investment, therefore, in the more durable capital. Because of the current diminution in the demand for consumers' goods, there is a fall in their price in relation to producers' goods. Thus the price margins between consumers' and producers' goods are reduced, corresponding to the reduction in the rate of interest and the reduction in the time preference for consumers' over producers' goods.

This change in prices discourages the use of liquid funds and readily shiftable resources in the lower stages and encourages them in the higher stages. Resources are shifted from the lower to the higher stages; replacements find their way into the higher rather than the lower stages; and production of capital goods is encouraged at the expense of consumers' goods. This process will clearly tend to go on until the profit margins are once more equal in all stages. The higher price of producers' goods attracts and the lower price of consumers' goods repels sufficient resources to bring about equilibrium once more. The new structure of production corresponds to the new saving habits of the community. There is a permanently lower rate of interest, a permanently lower margin between the prices at the various stages, and a permanent change in the structure of production.

Similar and opposite effects occur if the rate of savings decreases.

Thus, changes in the degree of saving, working through the interest rate, effect appropriate modifications in the structure of production. These modifications may be expressed as changes in the roundaboutness of the capitalistic process. They tend to modify the structure of production by increasing or decreasing the length of the production period or process. As saving is relatively increased, under the operation of the interest rate the process of production tends to be lengthened; as saving is relatively de-

creased, again under the operation of the interest rate the process of production tends to be shortened.

It would seem that the lengthening or shortening of the process of production is brought about both by increasing or diminishing the total resources in the higher stages relative to the lower and by increasing or decreasing the total number of stages. Even if the number of stages were not changed, a fall in the interest rate, for example, would still lengthen the process of production. The process of production really consists of a number of processes, not all of which begin or end at the same time. Some begin at earlier stages than others; some might take place at the last moment just before the consumer takes over the goods. Hence the length of the process of production is an average length, the average of the lengths of all its separate parts. The fall of interest rates increases this average by increasing resources in the longer, rather than in the shorter, processes. This increase occurs even if the number of stages does not change; but apparently the number of stages also changes. A fall in the rate of interest makes more remote, more time-consuming, more roundabout processes profitable which were not profitable before. More remote stages will, therefore, be undertaken, and not only the average length but the absolute length of the process will be increased.

Why should structural change cause disturbances? It is the essence of Hayek's argument that these disturbances and reestablishments of equilibrium are not different from other similar reactions that are continually occurring in the economic system. Every such disturbance sets up correctives that restore the equilibrium, and the particular case of changes in the rate of saving is not an exception. The change in the various price levels soon calls into action appropriate changes in the use of resources at the different stages, and these changes all move in the direction of reducing further disturbances and establishing equilibrium once more. Soon the establishment of appropriate price differentials between the stages of production equalizes profits throughout the field, and any further transfers of resources or any further changes in the structure of production become unprofitable. The intelligent anticipations of producers, which enable them to act in advance of the various changes in prices, interest, and wages that

events will bring about, guarantee that this process of adjustment will not be long delayed.

If saving were independently subject to violent and unforeseen fluctuations the production of capital goods might go through equally violent variation. But experience indicates that such fluctuations in saving do not arise except as a result of previous fluctuations in income. They are an effect, not a cause of the latter. It seems reasonable to hold, therefore, that independent variations in the rate of saving involve no *cumulative* disturbances in the processes of production, and particularly no exaggerated fluctuations in the production of capital goods, such as must be explained to account for the observed phenomenon of the trade cycle. In other words, society can adjust itself without violence to the changes in the structure of production necessitated by equivalent changes in the relative levels of saving and spending, provided such changes in saving and spending arise from the voluntary decisions of the community.[3]

Forced saving

The introduction of an elastic money supply brings a disturbing element into an otherwise self-adjusting economy. How this disturbance comes about must be examined.

An expansion of bank credit in use comes about when the market rate of interest diverges from the natural or equilibrium rate. This expansion may occur either because additions to reserves cause the banks to lower the market rate or because circumstances making for more favorable expectations among entrepreneurs raise the equilibrium rate. As long as the market rate of interest is below the natural rate, it pays the entrepreneurs to borrow at banks, and so the total volume of bank credit increases. In this respect, however, the entrepreneurs respond to a fall in interest in exactly the same way, whether this fall has come about by an increase in the voluntary savings of the community or by a decision on the part of banks to expand the volume of bank credit. In the early stages, the consequences are much the same.

The recipients of the additional bank credit on these more easy terms, as in the case of an addition to savings, use them for enlarg-

[3] Cf. Hayek, *Monetary Theory and the Trade Cycle*, pp. 205–206.

ing the means of production. There is a rise in the price of producers' goods relative to consumption goods, a tendency to transfer mobile resources to the higher stages of production, and a tendency to increase the number of stages by undertaking projects of a more roundabout type than could have been profitable on a higher level of interest. In short, the fall in the rate of interest brought about by the increase in available bank credit has the same consequences as when additional savings have lowered the rate—namely, a change in the structure of production. There are more plants, more durable means of production, a flow of labor and materials toward the higher stages of production.

As these changes go on, there is a growing scarcity of consumers' goods. It is impossible to have expansion in all fields. If resources are fully employed, more resources devoted to producers' goods must mean less resources devoted to consumers' goods. With voluntary reduction of consumption, i.e., voluntary increase in saving, the fall in the demand for consumption goods releases labor and materials for the needs of the capital goods industries. But expansion of investment on the basis of bank credit involves no such voluntary release. Instead, the increased purchasing power made available to investing entrepreneurs enables them to offer higher rewards to the factors of production and so entices them from the production of consumers' goods. The output of consumers' goods is therefore reduced, and to that degree the community is compelled to refrain from consumption. Thus saving has been increased, just as before. The people have reduced their consumption. But whereas in the former case saving had been voluntary, in this case it is not voluntary. It is "forced saving"; or to put it otherwise "forced reduction of consumption."

The outward evidence of this "forced saving" is the rise in the price level of consumption goods, and the accompanying fall in the purchasing power of the portion of income devoted to consumption.

Consequences of forced saving

But this is a situation that cannot last. There has been no real change in the sentiments of the consuming public. They have not wished to reduce their consumption, nor would they do so

were it not for the compulsion of prices. Consequently, as soon as their money incomes permit it, they revert to their habits of consumption and attempt to restore their ordinary, unchanged standards; and the increase of money income necessary to do this is soon at hand. The increased money at the command of entrepreneurs, as it goes into use for the purchase of producers' goods, brings additional income to the holders of such goods and the owners of the factors of production needed to produce them. Upon the receipt of this additional income, consumers proceed to expand consumption to its former (and usual) proportions. The result of this expansion is a decided rise in the price of consumers' goods, a rise that is the more marked because a shrinkage in the flow thereof and an increased volume of monetary demand, due to the enlarged flow of money in circulation, come at the same time.

Fundamentally, this outcome must be interpreted to mean that the consumers have never sanctioned the changes in the structure of production begun by entrepreneurs under the influence of an "artificial" rate of interest and are taking the necessary steps to restore the former arrangements; and restored they will be, for the high prices of consumers' goods make production in that field more profitable and also enable producers therein to offer higher rewards for the factors of production. This matter is a serious one for the producers in the higher stages, who find their ventures not so profitable as they had expected. Indeed, if they are on the margin, they find themselves incurring loss. The result is bound to be a transfer of mobile capital and labor from the higher to the lower stages, a reduction in the production of capital goods relative to consumers' goods, and an abandonment of some projects altogether.

Can the banks keep the process going? This process of reversing the changes in the structure of production that began with the increase of bank credit could be avoided by a further increase in the volume of bank credits, sufficient to prevent the enticement of mobile resources from the higher to the lower stages. This further increase, however, would have to be greater than the initial one, for the general price level and the general level of incomes have now risen; but whatever it is, it will have to be forthcoming if the abandonment of a good deal of capital production

is to be avoided. For a while, banks, doubtless, will be willing to increase their loans, and the producers to make them. The rise in the price of consumers' goods may seem to offer the hope of extra profits. Entrepreneurs may be willing to pay the higher prices needed to keep the factors of production, for projects once under way cannot be abandoned easily.

But this procedure is only a stop-gap. It does no lasting good. The increased incomes going to wage earners and others will again be diverted into the demand for consumers' goods, with further rise in prices thereof and the old round once more. In short, the community is caught in what is popularly called the "spiral of inflation."

Clearly, this expansion cannot go on. Under a gold standard, there are very definite limits to the expansion of credit; and, as these limits are approached, the rise of the rate of interest which the banks are bound to impose ends the continuing demand for funds for productive purposes. Even under a paper standard, the continuous rise of prices, which must result from a continuance of credit expansion must, in the long run, be intolerable. It may be taken for granted, therefore, that, after a year or so of expansion (with bank rate below equilibrium rate), the banks will be compelled to call a halt.

At this point, the reversal of the changes in the structure of production is bound to begin, and somehow the structure must be restored to the arrangement appropriate to the level of voluntary savings. The difficulties involved in this restoration make for crisis and depression.

Where the trouble really lies. Thus the cause of all the trouble is fundamentally an *overinvestment brought about by forced saving.* Voluntary saving (unless it is subject to improbably abrupt variations) brings about a change in the structure of production that is permanent. Forced saving, on the contrary, brings about a similar change in the structure of production that cannot be permanent. It is only a question of time until the changed structure becomes impossible and the former one must be restored. The real savings to support the change are not there and cannot readily be made to be there. The crisis, therefore, comes about because of a shortage of savings.

Thus Hayek's theory of the cycle brings him to conclusions

diametrically opposed to the theory of those who hold that excessive saving is the cause of our distresses. There is no excessive saving. There is nothing to indicate that there can be excessive saving (that is, as a result of the voluntary decisions of the community). What really happens is that there can be excessive investment. Even excessive investment is possible only because of the illusions created by our elastic currency. Bank credit does create an illusion, an illusion that is not realized by businessmen who are in no position to know what causes the relatively low level of the market rate of interest. The interest rate looks the same to the entrepreneur whether it is caused by the voluntary savings of the people or by the enlarged credit offerings of the banks. Once bank credit is made elastic, the automatic checks to distortion of the structure of production are no longer effective or, if effective, too late to prevent cumulative depression. The bank credit is a subsidy for the producer of capital goods, but a subsidy that is certain to be withdrawn when it is needed most.

War booms as an example

The experience of the United States in the Second World War furnishes an instructive example of the process that Hayek visualizes.

A stage was soon reached in the expansion for war purposes when resources were fully employed and further expansion for war could only be at the expense of output for peace. This was the "guns or butter" stage. We could have guns or butter, but we could not have both. If armament expanded (capital goods), consumption would have to be restricted.

This could have been accomplished by consumers handing over sufficient parts of their incomes to the government, either in taxes or by the purchase of government bonds. These could be regarded as "voluntary" savings. To the extent that they were made, the shift in production could take place without price rise. We produced more tanks, and less automobiles.

But these sources of funds were not enough to meet the government's needs, and resort was had to the banking system to supply what further funds were needed. Credit expansion now comes into the picture. This credit expansion enabled the government to place orders for battleships and tanks and aircraft and

ordnance and all the apparatus of war, and enabled the producers thereof to entice wage earners and the owners of factors of production from the production of other goods.

But the workers making all these things were not interested in buying them. They wanted consumption goods. They would contribute to the purchase of a battleship by taxes, or voluntary bond purchase, but the bulk of their incomes they would have preferred to spend otherwise and would have paid higher and higher prices, if they had to.

If, therefore, the government had not prohibited the production of some things, rationed the output of others, and fixed the prices of all, there would have been a serious and growing inflation, with all its "spiral" consequences. The government would have had to pay higher and higher prices for munitions to keep resources from being used for consumption, and would have had to borrow more and more for the purpose. In short, they would have had to compete, progressively, and on higher and higher price levels, with the demands of their citizens. This costly competition, with its excessive rise in prices, would have gone on as long as the government continued its war operations.

This is an exaggerated case of the kind of competition for resources between expenditures of a capital nature and expenditures for consumption which, as Hayek sees it, goes on in every boom based on bank credit expansion. It is there whenever inflationary borrowing takes the place of voluntary saving. Its worst consequences were prevented during the war only by other devices for restricting consumption, whereby the government used rationing and allocation of resources instead of the crude mechanism of rising prices. Peacetime expansion arising from the investments of private enterprise cannot make use of these expedients.

The course of depression

In Hayek's theory, the depression may be defined as the period during which the structure of production is being shortened to its appropriate length. This shortening process is a serious problem and cannot be done in a moment. It takes time, often a painfully long time. Like all periods of reaction, it is commonly carried too far, so that the shortening process is overdone, and a structure

of production temporarily reached which is shorter and less roundabout than will be found later to be appropriate to the actual volume of voluntary saving. To overcome this exaggeration takes time also. All this explains why depressions are as long as they are.

Let us examine this painful process a little more closely. We have seen that the attempt of the consumers to restore their normal purchases, together with the stoppage in the expansion of bank credit, makes the higher stages of production unprofitable. The result of this is fairly sudden stoppage of work, at least in the higher stages of the longer processes, and a fall in the price of producers' goods. The demand for consumers' goods continuing, and the price of producers' goods of a specific sort used therein having fallen, it still pays to employ labor and nonspecific capital in the lower stages of production; and theoretically, there should be a speedy transfer of workers and nonspecific capital from the abandoned higher stages to these lower ones. In fact, this process is slow. Shorter processes still have to be started from the beginning. Goods still have to pass through the necessary stages. In addition, it is possible only gradually, as successive stages are reached in the passage of goods to the consumer, to absorb the labor and nonspecific capital released from the longer and more roundabout processes. Moreover, this delay is increased by the uncertainty of producers in respect to appropriate methods in the shortened process where a relatively smaller amount of capital and a relatively larger amount of labor are needed.

In brief, workers and mobile resources are released from the longer processes faster than they can be absorbed in the shorter and the consequence is a growing volume of unemployment. The forces bringing this about are intensified by the general deflation that accompanies the shrinkage of activity. The reduction in bank credit, together with the velocity of circulation induced by hoarding on the part of businessmen and consumers alike, brings about a fall in the price level. In this fall, the prices of producers' goods take an exaggerated share, and the relative rise in the prices of consumers' goods that this involves adds to the forces making for a shortening of the process of production. Under this pressure and the pressure of unemployment and low wages, less

and less capitalistic methods are used, and more and more labor is employed in proportion to capital. In this way, the shortening process continues for a longer time than is really needed, and the structure of production is changed beyond the arrangement appropriate to the normal levels of spending and saving. For this reason, the length of the depression and the delay in restoring normal conditions are greater than they would otherwise have been. In other words, the attempt to restore the normal levels of consumption sets up a further disturbing factor—that is, deflation and a fall in prices—which lengthens the depression and adds to the obstacles facing recovery.

How to cure a depression

It follows from this analysis that the essential "cure" for a depression is to restore as quickly as possible the structure of production to the status demanded by the proportions of voluntary (not forced) saving and spending. It further follows that most of the methods used in practice to bring about this cure are ill-adapted to do so and may only make matters worse.[4]

Particularly, the evil cannot be cured by advancing money to consumers. It is not lack of consumers' purchasing power that is causing the trouble. Quite the reverse, it is the relatively high demand for consumers' goods that is at fault. To add to this demand by advancing funds to consumers makes matters worse. To increase consumer credit at the moment of the crisis intensifies the crisis. To increase consumer credit in depression prolongs the depression. More exactly, although such increase may absorb resources for a time, it is an artificial stimulant that brings about a new crisis whenever it is removed. It is no permanent cure; it merely bolsters up temporarily a wrong and artificial structure of production.

If any credit is to be granted at all, it should be to the producers, to encourage them to lengthen the processes of production; and this only because the effects of deflation have caused the structure of production to shrink more than the voluntary distribution of saving and spending will eventually justify. But a very precise knowledge of the amount of stimulus to be given and very careful

[4] See L. Robbins' *The Great Depression* for a brilliant exposition of how not to cure a depression.

arrangements to withdraw the credit at the precise time necessary to avoid overexpansion of producers' goods, and so another boom and crisis, would be needed. Credits would do more harm than good if they again caused longer processes to be started than could be maintained in recovery without the help of continued credit expansion. These requirements are so exacting that it would be almost impossible for the authorities to do the job rightly. Indeed, the logical end of Hayek's analysis is simply this: that once an expansion gets under way, crisis and depression are inevitable; and once depression has arrived, there is little to do but wait patiently for the slow processes of time to bring about revival. Once the storm has come, the storm cellar is the only place for all of us.

For the problem of depression itself, there is only one effective solution, and that is to eliminate the elasticity of bank credit, which is the ultimate source of the trouble. Forced saving must disappear. The appropriate instrument for this purpose is a fixed supply of money, subject only to such variations as will neutralize changes in the velocity of circulation and in the coefficient of monetary transactions. This raises questions of monetary management, which will be taken up in Chapter 19.

Some objections

Hayek's theory of the cycle is an ingenious solution of the problem posed by the disproportionate fluctuations in the production of capital goods. Based on a logical application of the theory of interest, it finds the explanation in the alternating expansions and contractions of the structure of production brought about by an elastic money supply. There are serious obstacles, however, to the acceptance of this theory, particularly in the uncompromising form in which it is presented above. Some of these objections emerge in the discussion of the following questions: (1) Is the assumption of full employment useful? (2) Is forced saving altogether ineffective? (3) Is the interest rate so important? Let us examine these questions in order.

The assumption of full employment

One objection to Hayek's theory arises from his assumption that cycles are disturbances of an equilibrium where resources

are fully employed, and the necessary consequence that expansion of production goods can be only at the expense of consumers' goods, and vice versa.

This theory is paradoxical. Not only is it belied by the evidence of fact, but it seems to be mistaken as to the relation of the demand for producers' goods to the demand for consumers' goods. As to the facts, complete employment of resources is very rare even at the peaks of activity. And one of the principal characteristics of industrial fluctuations is the simultaneous expansion and contraction in the output of *both* producers' and consumers' goods. In fact, the latter outcome is what would be expected because of the nature of the demand for producers' goods. This demand is a derived demand, dependent upon and reflecting the demand for consumers' goods. When the demand for consumers' goods rises, the demand for the producers' goods that go to their making rises in greater proportion.

To this objection the answer might be made that the existence of unused resources and the possibility of expanding *both* producers' and consumers' goods concurrently may indeed delay, but cannot avert, the inevitable consequences of increasing bank credit.[5] The low rates of interest still encourage expansion by the producers in the higher stages of production. In this case, however, they do not withdraw resources from the field of consumption goods. The additional income which, via their payments to the factors of production, comes to consumers may indeed raise the price of consumers' goods, although even this can be avoided as long as output can be expanded by drawing on unemployed resources. So long as this reserve of resources holds out, expansion of both producers' goods and consumers' goods may continue. But sooner or later all effective resources will be at work, and if then credit expansion continues, there will be a flow of resources to the higher at the expense of the lower stages, and the full effects on the structure of production will set in.

Thus there is considerable room for expansion before the structure of production is much distorted. Forced saving does not have the same scope. It comes into play mainly in the brief period at the end of the boom. Furthermore, it now is no longer inconceivable that recovery from depression might be hastened by

[5] Indeed, Hayek makes this answer himself. See p. 247.

appropriate aid to consumers. The encouragement this gives to the consumers' goods industries need not make it harder for the producers' goods industries. It would only if resources were hard to get. With resources available in quantity, aid to consumers is likely to be encouraging rather than discouraging to the industries making capital goods.[6]

Is forced saving ineffective?

As we have seen, Hayek holds that expansion based on forced saving will end in a period of depression when under the pressure of consumption the structure of production is restored to its former level. And it is implied therein that the capital invested in this expansion is largely lost in the ensuing slump.

This belief is not necessarily true.

In the first place, the pattern of consumption itself may change. Some of the additional money created by the banks in expansion is retained by business for use in buying intermediate products. Some of it, owing to redistributions of income during the process of expansion, will be shifted from those less inclined to those more inclined to save.

Furthermore, some of the roundabout processes begun in expansion may be completed before the limits of bank credit had been reached. To that extent the interrupted flow of consumers' goods is resumed, and consumption restored without the upward pressure on the prices of the factors of production that tends to produce the crisis. Indeed, a slow and gradual inflation accompanied by reasonably rapid ripening of investment into consumption goods need not involve the catastrophic consequences that Hayek fears. Hansen suggests that the "forced saving" imposed upon society during the long period of rising prices between 1896 and 1914 was not accompanied by an excessive amount of instability. On the contrary, it was one of the most stable periods in the last hundred years.[7]

Under these conditions, the structure of production is not re-

[6] Whether the relation of demand for consumers' goods and the demand for producers' goods in cycles is to be regarded primarily as competitive or primarily as complementary is a question that appears in various explanations of the cycle. It will be discussed again in more detail in Chapter 15, "Saving and Investment."

[7] A. H. Hansen, *Full Recovery or Stagnation* (New York: W. W. Norton & Company, Inc., 1938), Chapter III.

stored to its former pattern, and the capital invested is not all lost.

It is true that some capital equipment may be lost. Projects that are begun may have to be abandoned. Capital goods will be inadequately maintained and replacement will be neglected. But it is doubtful if, on any large scale, more capitalistic methods are abandoned and replaced by less capitalistic methods. A specialized plant producing producers' goods cannot well be abandoned once it is built, and it will not be abandoned as long as the output brings in something over prime costs. Furthermore, the difficulties of depression may encourage cost-reducing innovations and improvements that will help to maintain profitable production in the capital producing fields. Where losses are unavoidable what happens is not so much a reduction in the number of stages as a reduction in the capitalized value of producers' goods, a general writing down of all capital equipment, revaluations, and reorganization sales at reduced prices. Only if these economic reductions are regarded as reduction in capital and in the length of the capitalistic process, is it possible to define depression as a period when the structure of production is being shortened.

Even in depression capital investment goes on. Possibly in the depth of the great depression of the 1930's new capital coming forward for investment was actually less than was needed for replacements; that is to say, net investment was negative. But it is probable that in most depressions net investment is still going on. The volume of investment is, however, much reduced, and reduced most in the processes farthest from the consumer.[8]

Is the rate of interest so important?

Serious criticism is directed toward the importance that Hayek, along with other monetary theorists, ascribes to changes in the rate of interest. Evidence is growing that the rate of interest is not notably flexible; that its changes are too small or too delayed to be of consequence; and that in actual practice business is not much influenced thereby. Long-time changes in capital production may be caused by changes in interest rates, but the short-

[8] For an acute criticism of Hayek's theory see R. G. Hawtrey, *Capital and Employment* (London: Longmans, Green & Company, 1937), Chapter VIII.

time variations of the cycle are more likely to be induced by changes in the prospects of profit or by spurts of invention and innovation.

To meet this criticism, Hayek has recently advanced an alternative statement of his theory in which he shows that, even if interest rates are fixed throughout the cycle, variations in the structure of production will still occur; but now it is changes in the level of profits which brings this about.[9]

An increase of demand for consumers' goods in a period of expansion (which might originate from investment by optimistic entrepreneurs) brings about, until expansion reaches a certain "critical point," a more than proportional demand for investment goods. As wage earners in the field of investment goods add to the aggregate of consumption, resources in consumers' goods production will approach full employment, and elasticity of supply begins to fail. At this point, prices of consumers' goods tend to rise, and, when they do, the relative inflexibility of wages results in a fall in real wages and a correlative rise in profits in consumers' goods industries.

Although the rise in profits would seem to encourage further demand for instruments of production, this result is counteracted by the effects of the fall in real wages. The fall in real wages makes less capitalistic methods of production more profitable. It increases the use of labor relative to machinery; it encourages entrepreneurs to substitute less durable and less expensive for more durable and more expensive machinery. Thus, although there may be some increase in demand for specialized machinery used in consumption goods industries, the general tendency is to reduce the demand for investment goods, particularly in the earlier stages of production. This tendency goes on as long as prices and profits rise, as they do in the consumption goods industries and in those capital-producing industries that immediately cater to them. The general result is to arrest the expansion of the more capitalistic processes, while the less capitalistic processes are expanded to their limit.

Thus the expansion of consumers' demand that accompanies a boom eventually forces a *contraction* in the demand for invest-

[9] F. A. Hayek, *Profits, Interest, and Investment* (London: George Routledge and Sons, Ltd., 1939), Essay I.

ment goods. This penalty on the earlier stages sooner or later forces them to reduce employment and precipitate a general collapse. If the additional incomes generated by investment had been saved, not spent, or even if labor and other resources were reasonably mobile, doubtless collapse could be avoided. But as long as additional income is spent and as long as factors are not mobile, depression is inevitable.

The depression that ensues continues until investment demand once more revives. The impulse to this revival commonly found in the fall in interest rates now comes from the fall in profits caused by the lag of wages behind prices. The rise in real wages that this implies puts a penalty on less capitalistic methods and causes a shift to labor-saving machinery and increased demand in industries in the earlier stages of production. The increase of income thus generated starts a spiral of demand that, until prices rise, reinforces the expansion of capital goods industries. In this way, the process of restoring more capitalistic methods goes on, only to be halted when the pressure of consumption demand raises prices and profits and brings up once more the critical point where demand for investment goods begins to shrink.

Thus the economic system, once moved from its equilibrium position, generates one cycle after another. Although the impetus to change is variations in profits, not interest, the essential features of fluctuation are still vertical changes in the structure of production, undue expansion of investment output, and collapse thereof because of excessive spending—that is, because of inadequate saving and "scarcity of capital."

14

UNDERCONSUMPTION THEORIES

WE NOW COME to a group of theories commonly called "underconsumption theories." All of these theories, although they differ from one another in details of explanation and to some extent in degrees of plausibility, agree in this: that inability on the part of consumers to buy the products of industry at prices that will cover their costs is the fundamental cause of recurring crises and depressions. What brings industry to recurring stoppage is the inability of producers not to continue production (there is no evidence of lack of capacity or of capital) but to find an outlet, at profitable prices, for their goods.

As Haberler has pointed out in his *Prosperity and Depression*, underconsumption theories are not easily stated, largely because their scientific standard is lower than that of the theories already analyzed. Probably this ambiguity is derived from the fact that they have been developed to a considerable degree by nonprofessional economists, whose ability to grasp all the implications (and confusions) of their theories is none too great. The underconsumption approach, too, is the natural approach for the "man in the street." It sounds plausible and wins ready acceptance. For this reason, it has a practical importance, perhaps out of proportion to its scientific content. Not only is it the background of the more fantastic schemes for "sharing wealth" and of such movements as the Townsend Plan, but it furnished the momentum behind much that is most characteristic of the New Deal. The tax on corporate surplus, the wages and hours act, the NRA, and the vast relief expenditures, in so far as they were motivated by "spending for recovery," all owed their vitality to the Administration's tendency

to accept an underconsumption theory, if not of business cycles, at least of crisis and depression.

As has been noted above, the underconsumption approach is made up of a group of theories, not a single theory. In this group, some are more scientific and thoughtful than others. Some are so simple as to be called naive. They suffer from inability or unwillingness to carry the analysis far enough. We shall examine this group by proceeding from the more superficial form of the argument to the more searching.

Naive Underconsumption Theories

1. The simplest form of the underconsumption theory is that the economic system *cannot* distribute enough purchasing power to enable the output of industry to be sold at a price that will cover costs (including a reasonable profit).

The argument is based on the assumption that costs that do not represent expenditures paid out to consumers, directly or indirectly, are incurred in production (and included in price), with the result that the aggregate value of the product turns out to be higher than the purchasing power made available, and the total product cannot be sold. As it is sometimes popularly stated, "the workers in an industry cannot buy back their own product."

This popular phrase indicates the belief that wage payments are the only important payments available for purchasing power; and, indeed, even this drastic form of the underconsumption argument sometimes appears. A moment's reflection would indicate that this form of the argument cannot possibly be true. Payments are made by a producer to labor, it is true, including salaries; but he makes other payments likewise: interest on borrowed capital; rents and royalties for the use of property; payments for materials to those who produce or sell them; payments for repairs, maintenance, and replacement in respect to equipment and plant; and dividends to stockholders. All of these payments are part of the total stream of purchasing power and just as available for effective use as are wages or salaries. It is true that they may not be used as purchasing power; they may be hoarded or otherwise held out of use, but then so might wages. In any case, the theory is based on the assumption that purchasing power simply is not made available; not that, being available, it is not used.

What are the payments or items that could possibly enter into costs and price but not find their way as incomes into the hands of any individual who can use them for the purchase of goods?

Are "reserves" really reserved?

Major C. H. Douglas, whose books[1] are the most well-known expression of the naive underconsumption view, would answer that, to take an example, charges for renewals, depreciation, and other reserves are precisely of this nature. They are reserves, and are therefore reserved. Since they are reserved, they are not expended, but are simply bookkeeping items which must be added to the cost of production (and price) if the industry is to keep afloat. Hence our system of accountancy forces us to send out goods at prices at which they cannot possibly be all sold, since we have simply not distributed the purchasing power wherewith to buy them. It is true that these reserves are not merely for accounting purposes; they are designed to meet the eventual replacement and renewal of equipment, and when so used, clearly constitute purchasing power in the hands of potential spenders. In the meanwhile, they are reserved; and this lag of expenditure is one factor making for the underconsumption difficulty.

Of course, although this lag may be true of any one concern, in respect to all concerns there need be no lag whatever. Concerns presumably are setting aside reserves and spending money on replacements at all intervals of time. When concern *A* is setting aside reserves and apparently reducing purchasing power below costs, concern *B* may be making expenditures for replacements out of reserves, and so increasing purchasing power above costs. With vast numbers of concerns in operation, the law of averages would imply that the aggregate money value obtained at any time from expenditures on replacements would be as much as the value set aside for reserves and added to money price. Only in the improbable event that most concerns lay aside at one and the same time would this not hold true.

There is one situation in which this concurrent setting aside of reserves and expenditures on replacements are not likely to be

[1] Douglas has many books developing his definitely unorthodox views. The reader is referred to *Credit Power and Democracy* (London: Cecil Palmer, 1935), and *Social Credit* (London: Eyre and Spottiswoode, 1933). Useful summaries will be found in P. Mairet, *The Douglas Manual* (New York: Coward-McCann, Inc., 1934).

found. That is the period immediately following a burst of investment in fixed capital. The large depreciation reserves which this expansion will demand are likely to be continued in the slump, but, for various reasons, kept in cash and not currently invested in replacements. As long as this goes on, and provided this cash is not invested by the banks, there is a genuine instance of purchasing power not being distributed in such volume as to cover the costs of production, depreciation reserves included. But although this process exaggerates and intensifies a slump, it does not explain how the slump came about or how any period of expansion could occur.

We may conclude, therefore, that inability to generate sufficient purchasing power to support the industrial system is not a chronic defect of our society or an adequate explanation of cyclical behavior.

Income at the wrong time

The elusive underconsumptionist sometimes states the argument in another way. The whole volume of payments in respect to output is distributed *at some time or other* to consumers. But payments in respect to materials, replacements, machinery, and so forth are made some time before the final product emerges. These payments are received by various individuals *and spent.* They are thus no longer available for further spending. Since they were spent to consume the output of the past, they cannot be spent on the output of the present. It is this gap between the value of output now and the income distributed *now* that constitutes the deficiency of purchasing power in question.

This argument assumes that no further preparation is being made for the product of tomorrow; and in our continuously producing economy, this assumption cannot be fairly made. On the fair assumption that production will continue, the payments made today for materials to become the goods of tomorrow will supply the purchasing power needed to cover the cost of today's goods; or put in another way, today's goods are bought by today's income, which includes the money paid to the (final) producers of today's goods plus that paid to the producers of the materials for tomorrow's goods. If the objection is made that tomorrow's goods will not be prepared for, when the income from today's goods taken

alone is insufficient to buy them, it can be replied that today's goods are the result of yesterday's decisions, which, on the argument advanced, must equally have been unfavorable to further production. The argument that implies that tomorrow's goods will not be produced virtually implies that today's goods would never have been produced either. In other words, underconsumptionists who use this argument literally prove too much; for were the argument true, production would have ceased completely long since, for no level of production could have been profitable to carry on. The mere fact that production goes on at all seems to refute the argument.

One may fairly conclude, therefore, that, in a continuously producing society, time lags of the kind described do not produce trouble, at least in the way assumed, and that, if production is reduced, it is for some other reason than the one advanced by the underconsumptionist.

But a somewhat modified argument, which recognizes that the arguments of the preceding section are not compatible with any level of continued production, is advanced by naive underconsumptionists.

The A *plus* B *theorem*

Perhaps this argument is best shown by the celebrated *A* plus *B* theorem which Major Douglas, the leading naive underconsumptionist, uses to prove his case.

Douglas classifies all payments made by a business organization into two groups. These are:

A payments, which are all payments made to individuals, such as wages, salaries, or dividends; and

B payments, which are payments made to other organizations for machinery, raw materials, interest on bank loans, and so forth.

A payments constitute the flow of purchasing power; *B* payments (for reasons set forth in the preceding section) do not. Both *A* and *B* are costs and enter into price. Therefore, price equals *A* plus *B*, but purchasing power equals *A*. Consequently, there is a deficiency of purchasing power equal to *B*, and, unless this is made good, production must cease.

For a while the deficiency can be made up, by the advance of bank credit, so that a producer, for example, who expects to sell machinery, equipment, or raw materials to other concerns may borrow from a bank to pay his wage bill in advance of the sale. This practice is all right as far as it goes, but when the buying corporation proceeds to pay for these materials and equipment (*B* payments), the sums received are not available for expenditure but must pay off bank loans previously contracted. Thus *B* payments would appear to be always on the point of extinction and disappearance from the volume of available purchasing power.

If one makes the obvious point that, even if old loans are extinguished, new ones will continually be taking their place, since, if past loans are profitable, present and future loans should be equally so, the answer of the Douglasites would appear to be that this cannot be expected under the conditions of modern banking.

This outcome is partly because interest has to be charged on loans, so that on each round the deficiency to be overcome is greater; and there are limits to the expansion of bank credit. Mostly it arises from the monopoly position of the banks, for the banks profit, like all monopolists, from scarcity. It is to their interest to keep bank credit scarce and to reap from this scarcity the highest monopoly value. For this reason, banks are normally deflationists, always interested in restricting the supply of money. Thus, while they are prepared to supply to the public the purchasing power they need, they take good care to get it back with the maximum of dispatch. Every loan must be repaid, and all money is, at all times, on a short journey which always ends up where it began, in the bank. The banks are an enormous mechanism of suction, whereby money is ceaselessly being withdrawn from circulation.

Are the banks the real, villains?

From this angle, therefore, underconsumptionists come round to the very old argument that finds the source of our troubles in a "monopoly" of credit and would cure our evils by making the issue of credit a public function and causing it to be increased at need. Scratch an underconsumptionist, in short, and you find an inflationist.

We end, therefore, in a criticism of the banking system and a plea for public control of the issue of credit. There are arguments for such a procedure, but the arguments are not stated by the underconsumptionist. The underconsumptionist is well-nigh compelled to argue that bank credit is continuously restricted; and if he does, once again he proves too much, for on this theory output *must* go steadily downward and result in permanent collapse—a situation that is simply not in accord with the facts.

The truth in regard to bank credit is quite different. As we have seen in other chapters, where more scientific analysis has thrown light on the actualities of banking, disequilibrium can arise from bank credit sources, but it will arise from bank credit either exceeding or falling short of the volume needed to maintain stability of production and prices. There is no evidence whatever, in either logic or experience, that it persistently falls short thereof.

It has not been demonstrated by underconsumption theorists of this particular stamp that the economic system is unable to supply enough purchasing power to enable goods to be sold at prices that will cover costs of production. They have not been able to show that money payments entering into price, even in the form of depreciation reserves, do not find their way, normally, into purchasing power; nor have they appeared to state the facts in regard to bank credit, by asserting that bank credit has what might be called a downward bias and a deflationary trend. Furthermore, the arguments by which they endeavor to establish their position would prove, not that we go through alternating periods of expansion and contraction, but that industry must sink steadily downward until the economic system has completely run down. Therefore, we may regard this form of the underconsumption theory as fallacious.[2]

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[2] For a discussion of Major C. H. Douglas and his theories, the student is referred to the following:

A. H. Hansen, *Full Recovery or Stagnation* (New York: W. W. Norton & Company, Inc., 1938), Chap. IV.

R. G. Hawtrey, *Capital and Employment* (London: Longmans, Green & Company, 1937), Chap. X.

G. D. H. Cole (Editor), *What Everybody Wants to Know About Money* (London: Alfred A. Knopf, Inc., 1933), Chap. VIII, by H. T. N. Gaitskell.

Incomes adequate, but too much saved

2. The theories that we have examined find the source of our trouble in a fundamental flaw in our price system, which makes purchasing power chronically inadequate. A more plausible form of the theory takes a quite different position. In this form, it is not argued that adequate purchasing power cannot be distributed. The real difficulty is that, after distribution, the purchasing power is not adequately "spent." It is "saving" that causes the trouble. It is saving that creates a situation where goods cannot be sold. Although those who see saving as the root of the problem call themselves "underconsumptionists," it is oversaving rather than underconsumption that characterizes their theories.

In a rather naive form of the argument, saving is regarded quite simply as refraining from consumption and no consideration is given to the process of investment by which savings are translated into demand for equipment. Thus conceived, saving is a clear and certain source of deficiency of purchasing power. Saving without investment is deflationary, reducing the total purchasing power below the aggregate current value of output and bringing about, therefore, a fall in prices, and, in consequence, losses to producers, and a reduction in the volume of business.

Clearly, it is essential not to neglect the other side of the process —that is to say, investment and the relations between saving and investment; yet the naïve underconsumptionist apparently gives no consideration whatever to investment. He takes no account of the possibility of investment proceeding *pari passu* with saving, or of the relations between savings and investments, which may be brought about by the intermediacy of banks. As a result, he is quite unable to account for periods of revival and prosperity. If investment is left out of the picture, the effect of saving must be not merely deflationary, but productive of continuous and unrelieved slump.

If all underconsumption theory took this simple attitude toward saving, it would hardly need to be discussed. But, although this is a popular position, it is not the position of the leading exponents of the theory, as we shall soon see. Usually underconsumptionists regard the whole process of saving and investment as a single one. Savings are designed to be invested, and it is as-

sumed that they are. The central core of the underconsumptionist position is to be found in the effects of savings that are invested, not in the effects of savings that are not. It is held that the trouble with modern society is a persistent oversaving coupled with an increase of investment in productive capacity to a point that outruns the consuming power of the community. The sequence is oversaving, overinvestment, overproduction, and at last a great flow of goods unsalable at prices remunerative to the producer.

We will now examine the argument in detail, choosing for the purpose two well-known examples: (1) Foster and Catchings in the United States; (2) J. A. Hobson in England.

(a) Foster and Catchings' theory of oversaving

In an extreme form, those who hold this type of explanation seem to believe that savings as such, when invested in productive processes, are bound to bring about a collapse and a depression. It would not make any difference whether the volume of savings were large or small. Sooner or later, the savings would cause trouble. If they were small, the trouble would be delayed; if they were large, trouble would come quickly. But trouble there would be, in any case, as long as there were savings at all.

This type of argument is best illustrated from the writings of Foster and Catchings, who, through the Pollak Foundation, have done most to popularize it.[3] Their argument can be stated succinctly as follows.

Society does not spend all its income. Some part of it is bound to be saved. Some of this saving is carried out by industry itself, for not all the value product of industry is distributed in incomes; part is retained to add to productive equipment. Of that which is distributed in incomes, some part also is saved. These savings, *via* banks and security issues, find their way back to industry where they are invested; that is to say, they are used to purchase productive equipment, the means to produce more goods.

On the face of it, this volume of consumer and business saving would seem to create a deficiency of buying power in respect to goods offered for sale. It does this in the end, but not immediately. No deficiency arises immediately, for all the savings thus

[3] W. T. Foster and W. Catchings, *Profits* (Boston: Houghton, Mifflin Company, 1925); also "The Dilemma of Thrift," *Atlantic Monthly*, April 1926.

apparently taken out of incomes, and therefore out of purchasing power, are, by the process of investment, being paid out to wage earners (and other factors of production) engaged in the capital-producing industries. Hence the total volume of purchasing power is not affected by savings, since what is given up by one group is transferred to another.

Yet this situation of adequate purchasing power is temporary and short-lived. In due time, the productive facilities on which savings are being spent are ready for operation, and, after the lapse of a further period, the goods they are capable of producing are ready for the market and added to the existing supply. When this finally happens, then purchasing power is inadequate to buy both the original and the additional flow of goods at the existing levels of prices; or, more exactly, it is inadequate to do so unless the total volume of money is increased, either by incoming gold or by the inflationary action of banks.

This simple deduction from the accepted quantity theory of money indicates that, if output is increased faster than available purchasing power, prices must inevitably fall.

Banks unable to save the situation. Why cannot the volume of available money be appropriately increased? Granted that gold cannot be expected to increase in any certain volume, why should not bank credit be expanded with the expansion in the output of goods? What are banks for if not to bring this condition about?

Doubtless they are there for this very purpose. Doubtless, also, they attempt to do this very thing. Unfortunately, even if they meet the problem for the moment, they only set the stage for further trouble at a later date. They can postpone, but they cannot avert, the crisis. The reason for this fact lies in the use of bank credit. Bank credit is credit to producers; it is based on producers' property or producers' prospects of profit. When it is granted, it enables producers to add to production; but it does not enable producers to add to consumption (except by adding to production). Hence what happens is this: Credits are advanced to producers. They proceed then to put them to productive use. In this process, funds find their way into the hands of consumers (wage earners in the productive processes) and to this degree enable them to buy the goods produced with the previous savings. When in time the additional goods from the productive processes

come on the market, once more purchasing power is inadequate and the price level must fall, unless bank credit is expanded again. As there is a tendency to save a larger fraction of a larger total income, the deficiency of purchasing power that must be made up will grow at an increasing rate; and unless, therefore, bank credit is not merely expanded, but expanded at an increasing rate, prices must fall.

To suppose that banks can continue to meet this situation is to forget all the lessons of experience. The truth is, they cannot continue to do so; sooner or later, the state of reserves calls a halt or imposes some restriction on the rate of increase. When this time comes, the ultimate results of the process of saving can no longer be postponed. The deficiency of purchasing power, put off for a while, is finally here; and the crisis begins.

It follows that it is impossible for a society to save without causing crisis and depression. This difficulty, in short, is the "dilemma of thrift."

Saving not necessarily the cause of trouble. Two obvious criticisms of this rather extreme attitude can here be made.

1. In the first place, the argument, when reduced to its essentials, merely states that an increase of output at a rate faster than the increase in the volume of monetary purchasing power will cause price reductions and a depression; but there are many influences that will cause this result, not merely an increase in saving. As Hansen has pointed out:[4]

> A precisely similar situation will develop in each of the following cases (among many others that might be cited), as can readily be seen without further argument: (1) increased personal efficiency of labor, (2) improved management methods, (3) new inventions and improved processes, (4) increased population and labor supply.

In short, any dynamic factor will do what Foster and Catchings attributed to the process of saving. The theory, from this angle, must really be listed among those which find the cause of cycles in the operations of progress, rather than as an underconsumption theory, such as Foster and Catchings themselves seem disposed to call it.

2. Furthermore, it seems incredible to suppose that society can-

[4] A. H. Hansen, *Business Cycle Theory* (Boston: Ginn and Company, 1927), p. 44.

not adapt itself to any saving whatever, no matter what its size, no matter how steady it happens to be. One still has to face the formidable arguments of Hayek that voluntary savings can be directed into investment without setting up the accumulative strains involved in prosperity and depression. It is true that great variations in saving, on the one hand, or sudden substantial increases in the rate of saving, on the other, might make adequate adjustment impossible and lead to characteristic cyclical consequences. But that society cannot absorb any savings at all without dire consequences does not seem probable. Our interest rates have some flexibility after all, and consequently, some savings could be invested, some increase of output take place, and some fall of prices be feasible (owing to falling cost of production), all without bringing about any such cumulative strain as cycles display.

This argument is, indeed, recognized even by some of those who think that cycles are caused by the processes of saving. They believe not that savings in themselves are doomed to cause trouble, but only savings in excess of what might be called the "optimum" or "equilibrium" amount. This view is well represented by the writings of the English economist J. A. Hobson, perhaps the most famous of all underconsumption theorists.[5]

(b) Hobson's theory of underconsumption

Hobson does not hold that insufficiency of consumption arises from any insufficiency of money income as such. He holds, on the contrary, that normally the money costs of the processes of production are currently paid out in wages, salaries, rent, interest, and profit, and are, in the aggregate, sufficient to buy the whole product of industry. Furthermore, he does not hold that saving in itself, by which he means the whole process of saving-plus-investment, need constitute a source of disturbance. True to his classical conceptions (his work is heavily buttressed with Marshall), he believes that it is quite possible to devote the energies of society to investment (saving) as well as to consumption (spending), and to make changes in the proportions in which the resources are so devoted.

The root of his theory is not an objection to saving as such, but to undue saving—that is to say, such an investment in the means

[5] J. A. Hobson, *Economics of Unemployment* (London: G. Allen and Unwin, Ltd., 1922).

of production as to make for a supply of consumption goods greater than can be purchased (at lucrative prices). We have seen that Hayek also has found a possible source of trouble in overinvestment, but whereas he traces this to the forced saving caused by expansion of bank credit, Hobson believes that voluntary saving can also be excessive, something which Hayek regards as unlikely, to say the least.

Indeed, this is putting Hobson's view mildly, for he believes not merely that voluntary saving can be excessive, but that, under modern economic conditions, voluntary saving cannot avoid being excessive. Excess is the normal condition. We suffer from a chronic evil of undue savings, and this evil is the root cause of our recurring tendency to periods of depression and unemployment.

The reason for this astonishing situation lies in the unequal distribution of wealth to be found in all industrial societies. The most characteristic aspect of these societies is the extraordinary concentration of wealth in the hands of the few. The great mass of the people have relatively small incomes; a small minority have large incomes and receive a disproportionate share of the total income of society. Thus in the United States in 1929,[6] 42 per cent of the families had incomes of less than $1,500 per family and, in the aggregate, received some 10 billion dollars; while 0.1 per cent of the families had incomes in excess of $7,500 per family and, in the aggregate, received some 9.8 billion dollars. Thus 0.1 per cent at the top of the income scale received nearly as much as 42 per cent at the bottom.

The distribution for later years is shown in the following figures, which indicate the share of total national income in the United States received by the lowest three-tenths and the highest three-tenths of families when ranked by size of income.[7]

Families	*Per Cent of Income Received*		
	1935–1936	1941	1943
Lowest three-tenths	7.9	8.2	8.6
Highest three-tenths	64.4	63.0	61.4

[6] Leven, Moulton, and Warburton, *America's Capacity to Consume* (Washington: The Brookings Institution, 1934), p. 55.

[7] Simon Kuznets, *National Product in War Time* (New York: National Bureau of Economic Research, 1945), p. 122.

A late sample of "spending units" gave the following distributions:[8]

Spending Units	*Per Cent of Income Received*	
	1946	1947
Lowest three-tenths	9	8
Highest three-tenths	59	60

The effect of great inequalities of wealth

Were these disparate incomes spent to about the same degree, our sense of justice might still be outraged, but disrupting economic consequences would be absent. The production of goods and services would be unduly influenced by the desires of the rich, but there would be no particular reason why periodic crises and breakdowns should appear. But these unequal incomes are not all spent to the same degree. The actual facts show that, while the poor spend most of their incomes, the rich save more and more. The evidence shows not only that the bulk of savings comes from the higher incomes, but that the percentage saved increases with the increase of income.[9] In Hobson's view, this increase in saving with income is a natural, unavoidable result of the situation of wealthy, particularly of very wealthy, persons. Modern society has a class of persons, small in numbers, but very important in the income they receive, who are so well off that they cannot find any way of spending all their incomes. They may have the most luxurious tastes—fine houses, armies of retainers, yachts, estates, and all the elaborate paraphernalia of modern luxury—yet they are quite unable to spend the continually growing incomes they "enjoy." So we have the paradoxical situation that, although those at one end of the income scale would be glad to consume but are not able, those at the other end have the ability to consume but not the desire.

As a consequence, what cannot be spent is saved and invested. Productive facilities are added to, new capital goods come into

[8] Mid Year Economic Report of the President, July 1948, p. 67. A spending unit consists of related persons who live together and pool their income for their major items of expense.

[9] Cf. National Resources Committee, *Consumer Expenditures in the United States* (Washington: Government Printing Office, 1939), p. 20.

existence, and capacity to produce is increased. This development creates an activity in business which is encouraging to the expansion of bank credit, so that prices begin to rise. Out of this situation, further expansions of saving take place. The increase of total income brought about by this activity and this rise in prices is, as things normally go, not evenly distributed among all the coöperant economic classes. The reason for this lies in the well-known phenomenon of wage lag. In periods of prosperity, wages invariably lag behind the rise of prices. Real incomes of wage earners, therefore, do not increase as fast as money incomes; and the addition to incomes brought about by prosperity tends to flow in disproportionate amounts into the hands of the nonwage-earning classes.

It is just these classes who are already unable to spend their incomes in due proportions; and this addition to their incomes still further increases their already powerful impulses to save and invest.

Were the recipients of the enlarged income able to expand their consumption pro rata, this secondary expansion of saving, at least, might be avoided. In Hobson's view, the arts of consumption are conservative and traditional. They are deeply rooted in the habits and living standards of the various income classes. To use Keynes' phrase, the "propensity to consume" suffers from no little inelasticity; and this applies not only to the upper levels of income (indeed, one might expect greater elasticity in this region than in others) but also in the lower levels. Wage earners are notoriously conservative in their habits of consumption, and such increases of income as come to them, too, in periods of expansion (they do get *some* increase despite wage lags) may easily be added to the flow of savings, being deposited in savings institutions or used to buy insurance. As a result, the volume of consumption which, by virtue of existing inequalities of wealth, tends to be unduly small, now becomes, relative to the increased total income, even smaller. Wage lag added to the normal inequality of income is making formidable inroads on the capacity to consume.

Overproduction inevitable. In the meanwhile, the new factories and mines and workshops, the new equipment and machinery set up by the wave of saving are all coming to the point of output. When they begin to get into production and pour out the increased stream of consumers' goods that they are capable of

producing, the crisis emerges; for the consuming power of the people, reduced as it is by the drains to which it is exposed by the rising tide of savings, cannot possibly be adequate to absorb this flow of goods at prices remunerative to the producer. When this situation is eventually reached, overproduction has definitely set in, and prices begin to break; and to avoid further loss, the productive machinery is brought to a halt, with its accompaniment of reduced national income and a great increase in the volume of unemployment.

The period of depression that now sets in is familiar enough. The attempt to avoid loss by closing down factories continues the evil unabated, for it reduces still further the consumptive power of the people. Even the activity of those businesses which produce capital goods falls away greatly, for the disappearance of profits dries up the source of those incomes from which savings and investment come. Although savings continue, they begin to lie idle in banks and find expression in an increase of hoarding rather than a continuance of their normal outlet in investment. But although this retardation of investment is a source of unemployment in the capital-producing trades, it does in itself tend to restore in due time the right relationship between the amount of real capital and the rate of consumption. Eventually even the minimum levels of consumption put a strain on existing facilities; there is a demand for savings to flow into use, and, as they do so, a new period of "prosperity" emerges and continues until the familiar process of oversaving wrecks it once more.

Greater equality the only sure cure. As Hobson sees it, the cause of booms and depressions is to be found lying deep in the very heart of our modern industrialism—namely, in the great inequality of incomes that this structure always displays. As long as this persists, and in the absence of a revolution of consumption habits, which seems totally improbable, crises and depressions will occur and we will not get rid of the greatest of all economic evils, unemployment. Furthermore, there can be no remedy for this situation, save to remove the inequality of income that is its efficient cause.

Monetary increase can do nothing to cure the evil. Increase in money must come from our banks; and banks persistently advance money not to consumers but to producers, enlarging not the ability

to consume but the ability to produce. It is useless to offer abundant supplies of bank credit or investment capital to industrial concerns so long as the latter have no security that their increased output can be sold without prices falling; and they simply cannot have this security as long as the consuming public does not have the funds to purchase the additional supplies.

True, if the banks advanced money to consumers so that a larger proportion of the total monetary income could be spent on consumption goods, the evil might be, if not cured, at least reduced. But bank policy does not favor this procedure, and although something might be done, it would be of little consequence in the face of the persistent oversavings arising from inequality of wealth. To reduce this inequality, therefore, seems to Hobson the only method capable of removing the cancer of crises and unemployment from the economic body. Hence he advocates appropriate taxation of great incomes for the purposes of enlarging the income of the masses, via the social services. He favors the growth of labor unions or any other machinery capable of raising the general level of wages and reducing the degree of wage lag as periods of increasing output and incomes. He advocates regulation of monopoly prices so as to increase the real incomes of the masses of the people, and where necessary, such an increase of social ownership as would be dictated by inability in any other way to attack the sources of great incomes. In general, he leans toward an increasingly socialized community.[10]

But flexibility of prices and interest rates would help. One might very well question why the expansion of output, which, according to Hobson, smashes the price level and brings about depression, is not anticipated beforehand, and why, therefore, the future fall in price is not reflected backward into the current price of output, and by being so reflected, put a gradual brake upon unwise expansion. We may further question why this anticipation of possibly falling prices, together with the force of the steadily growing volume of savings offered for investment, would not

[10] A. H. Hansen notes the greater equality of distribution of incomes after taxes brought about by the British tax structure in the interwar period. He is inclined to agree with those who regard this greater equality of income as a principal factor in the relative economic stability of Great Britain in the 1930's as compared with the U. S. A. Cf. *Fiscal Policy and Business Cycles* (New York: W. W. Norton & Company, Inc., 1941), Chapter V.

lower the interest rates, and why this lowering of the interest rate would not put a damper on saving and encourage a relative expansion of expenditure on consumption goods.

In short, why do not the changes of prices and interest set in motion by the process of saving bring about progressive and gradual adjustment, instead of the delayed and eventually catastrophic results actually experienced?

Hobson's reply to this question is clear. He would grant that, if prices and interest were sufficiently flexible, such gradual adjustments might be made. But prices and interest are not sufficiently flexible. They operate, it is true, but they operate too slowly. Both prices and interest eventually fall, but only after the evil they are expected to avert has already arrived. The catastrophe of a depression is needed to bring prices and interest down. They are brought down too late, and when they fall, they fall too far.

If prices and interest were made more flexible, these evils might be avoidable. But there seems no possibility of attaining such a flexible system that it could easily cope with the stream of savings, which, in Hobson's view, so inexorably pours into investment. Hobson, indeed, is not to be lined up with those who find the source of trouble in "rigidities." Rigidities complicate the problem, but rigidity or no rigidity, the tendency toward oversaving will lead to crises, and there is no way of remedying this evil save to reduce it at its source in the inequalities of wealth characteristic of modern industrial societies.

American underconsumption theories

The particular emphasis of Hobson's theory upon the inequalities of income derives, doubtless, from his observations of contemporary England. Underconsumption theories that follow his lead in the United States do not stress this aspect so much. The apparent inability of this country to utilize, even in booms, the full productive power made available by modern technology is commonly traced by exponents of this school to the great inequality in the distribution of income; but cyclical underconsumption is attributed to the expansion in the output of consumers' goods without equivalent increase in the purchasing power of the masses of the people, the wage earners, the lower salaried workers, and in

some instances, the farmers. This unbalance, in turn, is traced to the rigidity of prices and wages in a period of increased production.

This increased production may arise, as in Hobson's theory, from the excessive flow of savings into investment, and thus from an increase in the supply of fixed capital; or it may arise from improvements in technology, such as appeared to be the source of expansion in the great American boom of the 1920's. In either case, unbalance is bound to arise unless either prices are reduced or wages increased in proportion to the increased output offered for sale. Unless one or the other of these things happens, then the increased output cannot be disposed of. The increase of profits which accompanies the gradually growing output does not ease the situation. Indeed, it makes it worse; for while such profits supply some upper-class consumption, they commonly seek further investment.

Now, modern developments have made prices more, rather than less, rigid as time has gone on. The growth of large-scale business, the tendency toward agreements, combinations, and monopoly, and the spread of price jurisdiction by private producers in one field after another have made for relative fixity of prices. Producers are loath to reduce their prices, even in the face of technological change, preferring rather to reduce their output when sales become no longer "profitable." Nor are wages sufficiently elastic to take up the slack. Labor unions may do something to improve the situation, but their power is limited, and they cannot prevent the emergence of great profits and the unbalance between production and consumption these profits imply and partly cause.

This statement of the underconsumption argument is common in the United States. Sometimes the emphasis is put on the increase in the profit margin and its influence in overexpansion, and sometimes on the inadequate purchasing power of the masses and its influence in bringing expansion to an end. Always there lies at the basis of their view the inflexibility of prices and wages in an economic system given to improvements in technology and the continued increase in the supply of fixed capital.

American experience, 1920 to 1930. These arguments seemed to find confirmation in the movements of output, costs, prices, wages, and profits in the United States during the years from 1920 to 1930.

Thus P. H. Douglas points out the following facts: Hourly output in manufacture probably increased not far from 25 per cent between 1923 and 1929. Hourly earnings of labor increased about 8 per cent, 1923 to 1928. Labor costs were, hence, reduced by not far from 14 per cent (i.e., $108/125 = 0.86$). On the other hand, prices fell only 2 per cent between 1922 and 1929. The result was an increase of profits in manufacture which, following Mills' figures, amount to 84 per cent between 1922 and 1929, although production was increasing only 37 per cent.[11]

The consequence of this arrangement was to stimulate enormously the capital-producing industries, with a top-heavy development in the capacity for producers' goods.

That this outcome would end in an unbalance of production and consumption appeared to Douglas to be fully confirmed by the evidence. Thus, whereas production as a whole increased 37 per cent from 1922 to 1929, his computations, as well as those of F. C. Mills, indicated an increase of 18 to 20 per cent in the purchasing power (that is, real income) of the urban manual and lower-salaried groups and of less than that amount in the purchasing power of the farmers and agricultural laborers. The percentage that both wages, and wages and salaries taken together, formed of the value added by manufacture steadily fell in the period: wages from 42.6 per cent in 1923 to 36.4 per cent in 1929; wages and salaries together from 53.4 per cent in 1923 to 47.7 per cent in 1929.[12] Wages and salaries in other occupations (such as services) are not included in this estimate and may have risen in this period; but there is no evidence that these incomes increased in any such degree as would be necessary to overcome the discrepancy in manufacture. On the basis of this evidence and of the fact that profits increased 83 per cent in the period, Douglas concludes that purchasing power was inadequate to take the growing supply off the market, and that this was the essential cause of the collapse of 1929.

American developments of the theory of underconsumption differ, therefore, from English in their emphasis on the relation of underconsumption to the characteristic American tradition of invention and technological change. In the traditional economy

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[11] P. H. Douglas, *Controlling Depressions* (New York: W. W. Norton and Company, Inc., 1935), pp. 55–58.

[12] *Ibid.*, pp. 69–70.

of England, where stability rather than progress colors the picture, the oversaving that comes from inequality of wealth may well seem the important factor in disequilibrium. In the United States, this disequilibrium is found in technical progress, because the very organization of society that normally accompanies large-scale production makes for inflexibility of prices and wages and prevents from operating the only means whereby the balance of production and mass consumption can be maintained and "underconsumption" avoided.

15

SAVING AND INVESTMENT

THE UNDERCONSUMPTION school, despite a certain confusion in its arguments, has rendered an important service. It has compelled economists to consider the possibility that saving in economic society might be excessive, and that the economic system might be thrown out of equilibrium by variations in the rates of spending and saving the national income.

The underconsumptionists have never had difficulty in persuading the man in the street. The notion that people have not enough money to buy the goods that are being produced is simple and direct and has an immediate appeal. But their influence in professional economic circles has been much slower in growing. The reason for this lies in a certain annoying confusion in their use of terms which has resulted in inconsistency in reasoning and considerable disagreement in the ranks. Underconsumption theory has been developed largely by heretics outside the boundaries of orthodox economic thinking. This circumstance has given a certain vitality to their arguments that is not always found in more orthodox circles, but it has been responsible for a lack of scientific precision in their theories that has hindered their acceptance by economists.

The persistence, however, with which the underconsumptionists stuck to their guns, and the growing suspicion that underneath their not-too-well-stated arguments there lies more than a grain of truth have lately brought about a considerable advance in their status; so much so that they have become not only respectable but, because of the conversion of some notable economists, distinctly formidable.

This result has been brought about partly by the more scientific discussion of the terms *saving* and *investment;* but particularly by the notable aid of J. M. Keynes, the distinguished English economist, who, in his *General Theory of Employment, Interest and Money* (1936), definitely espoused underconsumption approaches to the explanation of depression. Keynes may be said to have made underconsumption theory respectable, by clearing up its naive confusions and dressing it up in a carefully chosen scientific terminology.

The present and succeeding chapters will be devoted to this remarkable exploit. In the present chapter, some account will be given of the nature of saving and investment and the possible disturbances of economic equilibrium that may be associated with their variations. The following chapter will be largely devoted to Keynes' analysis of booms and depressions.

The process of saving and investment

If we were able to take a comprehensive picture of the economic system in operation, we would see a great machine devoted to the production of all kinds of goods. Some of these would be consumers' goods; some of them would be producers' goods, the equipment for production. How much is being produced in total and how much of each of these two classes has been determined by the decisions of the entrepreneurs of the community. These decisions, in turn, have been made upon the present prospect and future expectations of the effective demand of the people.

As a result of their production, entrepreneurs are able to pay out certain sums to the factors of production. These sums are salaries, wages, interest, rents, and profits, and together they may be called "the costs of production." They also constitute the incomes of those who supply the factors of production and, taken in the aggregate, are the means of payment for whatever goods and services the people choose to buy.

This income need not all be spent—that is to say, used to purchase consumers' goods. It may, at the will of individuals, be "saved"—that is to say, withheld from the purchase of consumption goods and made to serve as an accumulation of resources for the future.

The supposed use of these savings, however, is not merely an accumulation of resources for the future. It is assumed that they will be directed through the proper channels into the hands of those entrepreneurs who desire to buy equipment, machinery, and other forms of capital goods. As commonly pictured, this direction of savings into the hands of entrepreneurs is done by the financial machine or capital market—that is, the banks and other similar institutions which receive savings via bank deposits, security payments, and so on, and see that they get into the hands of the businessmen who wish to order buildings, factories, machines, and other productive equipment. Some part of savings is supplied directly by business firms. A substantial fraction of savings comes from the retained profits of corporations and is destined to be used for investment in buildings, equipment, inventories, and so on.

When savings thus get into the hands of these entrepreneurs and are spent on such capital goods, they are said to be "invested." The act of using them may be called "investment," and the volume of these investment expenditures in any period may be described as "the rate of investment." Because the term *investment* is used also for the purchase of a security by an individual, some prefer to use the term *capital formation*.

Thus we may think of two streams of funds flowing back from the recipients of income to the entrepreneurs, a consumption stream and an investment stream; the former from the spendings, the latter from the savings of the community. We may think of the system in equilibrium as long as the decisions of the entrepreneurs in determining the relative output of consumers' goods and producers' goods are in conformity with the decisions of the community in dividing its income between spending and saving. If entrepreneurs decide to devote more resources to the purchase of capital goods and less to consumers' goods, what is clearly imperative is that the community be moved, at the same time, to increase the scale of its savings, and to place them in the hands of the businessmen. In this way, the reduction in output of consumers' goods will correspond to the reduction in the demand for them, and the increase in output of producers' goods will correspond to the increased resources devoted to saving. A divergence in these decisions would seem to expose the system to disequilibrium.

Conflicting decisions of savers and investors

There is no reason to suppose, however, that these decisions will, in fact, be so neatly adjusted to each other. Saving, on the one hand, and investment or capital formation, on the other, are made by the decisions of two quite different groups of people, influenced by quite different motives. Decisions to vary the rate of investment are made by entrepreneurs. New inventions, or sudden increases of demand through war, or agricultural change, or changes of business sentiments as a result of political factors may occasion their decisions. Whatever they are, they may be summed up as all the forces which may affect the expectations of profit. The decisions that determine the rate of saving are made by the public seeking to accumulate resources for future use or consumption. The motive is provision for the future in the long run and desire for liquidity in the short run.

Neither of these decisions is made with any consideration or calculation of what the other decision may happen to be. Businessmen who decide to expand resources in equipment have not usually assumed that the public is about to save on a larger scale. Nor have those who decide to reduce the scale of their business expenditures done so because they have seen beforehand that savings are about to decline. In the same way, it can safely be said that the man who puts aside $1,000 out of his income has not necessarily done so because he thinks some businessman is about to install a machine. Nor if he turns his savings into current spending is it because he thinks somewhere some entrepreneur has increased the output of consumers' goods.

To make adjustment more difficult, the rate of saving out of income is steady, whereas the rate of investment is extraordinarily variable. Saving is essentially a steady process. It is dominated by conventional habits of life, which change but slowly and seem not to be subject to sudden and unexpected variations. So much is this so that substantial changes in the volume of saving are likely to arise only from equally substantial changes in the level of income. Investment, on the contrary, is most fluctuating. It has no regular growth; instead it proceeds by fits and starts. Indeed, what else could it be but variable, exposed as it is to the continually shifting expectations of businessmen and likely to be suddenly

disturbed by every manner of event, such as inventions, wars, changes in interest rates, and shifts in demand for this good and that?

For these reasons, there can be no certainty that the decisions to invest made by businessmen will be in harmony with those decisions to save by the public which seem necessary if the means for investment are to be forthcoming.

Savings do not get into investment automatically

The difficulty of reaching what we may call "synchronous decisions" in respect to rates of saving by the public and rates of investment by businessmen is only one part of the problem. Another part is equally difficult.

Savings, even when they are designed to find their way into investment by businessmen, do not reach their goal by any automatic or direct process. In this, they differ from spendings, for spendings do reach their goal directly. If a person spends his income, he proceeds to buy consumable goods and thereby directly furthers their production; but this by no means is the case when he saves. Instead, his savings must go through various channels before they reach their goal. It is true, if it is a businessman or a corporation that is saving either for expansion or for replacement of equipment, then there is a direct demand for capital goods, for the entrepreneur is turning his savings back into his business. The same holds true if a person buys securities direct from a business which, in turn, will use the proceeds to install new equipment.

These are only a part of the savings of the community. The rest of them go first into the financial machine, in the form of bank deposits, payments to investment bankers for securities, premium payments to insurance companies, and so forth. It is only through the operations of the financial machine that, at the next stage, the funds thus saved reach the hands of businessmen and are used for the purchase of productive equipment and other capital goods.

Now, of course, ideally the financial machine, if it operates efficiently, should be able to get the savings into capital formation with reasonable dispatch, to bring about that harmony between the decisions of the savers and the decisions of the entrepreneurs that is desired. After all, the financial machine is the market for

capital, and what is the function of a market if it is not to bring about harmony between the decisions of two groups of people, even if actuated by different motives? That is to say, any market tends to bring about equilibrium between the forces of supply and demand, and the capital market is no exception. Is it not the function of banks to equalize the supply of and demand for loanable funds destined for capital formation? Will they not, therefore, through appropriate variations in the rate of interest for the use of money, make savers aware of the demands of investing entrepreneurs and entrepreneurs aware of the intentions of savers? If they do, then an increase of saving on the part of the community would cause such a lowering of the rate of interest as to encourage an equivalent increase in investment; and an expansion by entrepreneurs would cause an increase in the rate of interest to the point where sufficient savings are attracted into the market. Thus the market rate of interest tends to become what Hayek calls the "natural" or the "equilibrium" rate.

This ideal behavior was considered to be so obviously the rational behavior of the capital market, and of both entrepreneurs and savers, that economists (and bankers as well) in the past have taken it for granted that the flow of savings finds its way into capital formation. In other words, they have practically assumed that the activities of saving and investment constitute a single, continuous process.[1] It is a self-adjusting mechanism that needs no special care and raises no special problems.

This self-adjusting mechanism being assumed, there could be no such thing as overproduction, for the income supplied to the factors of production that coöperate to produce output is both equivalent to and used for the purchase of the total output. That which is saved is not lost to circulation but returns thereto promptly and effectively through the medium of entrepreneurs' investments. Thus supply creates its own demand, and, while variations may take place in the kind of commodity produced and in the relative proportions of consumers' goods and producers' goods, the total output cannot outrun demand. This optimistic theory has long been known under the name of "Say's law," or the "law of the markets."

[1] As we have seen in the previous chapter, even the underconsumptionist Hobson, having been brought up on "classical" economics, made this assumption.

How the interest rate works in practice

Unfortunately, the actual behavior of the capital market is quite different.

The reasons for this are several. One reason is that the interest rate is slow to adjust itself to changing conditions.[2] It is conventional and "sticky," and may, therefore, remain unduly fixed at levels above or below what equilibrium demands. Even classical economics would take account of this. It is one of the common "frictions" found in any market.

Another reason is found in the dual functions of banks, which not only serve as intermediaries between the suppliers and demanders of loanable funds, but also are, in modern economic systems, the purveyors of the principal form of the community's money, bank credit. These functions may not be equally well served by any given policy. We have already seen how banks may be moved to expand their elastic credit facilities in times of optimistic expectations and how this can result in inappropriate expansions of capital production.[3] This situation means that eagerness to make profit by increasing the supply of money may cause banks to keep interest rates at lower levels than would have been justified merely by their function of passing on the available stream of savings to the entrepreneurs for investment. There are other times when, because of lack of confidence, banks may withdraw, and rapidly withdraw, their supplies of bank credit and, in their desire for liquidity, raise the rates of interest above the level which the supply of available savings would justify under the circumstances.

Perhaps the most important reason, however, arises from the fact that the rate of interest is not really determined by the volume of savings intended for investment in relation to the demand therefor by the investing entrepreneurs. At least, these are not the only factors determining the rate. There is another factor of great importance, which can be expressed as the demand for cash, as compared with the supply of money. This demand Keynes calls "liquidity preference."

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[2] See J. M. Keynes, *Treatise on Money* (New York: Harcourt, Brace & Company, Inc., 1930), Chapter 30, p. 203.

[3] See Chapter 18.

Liquidity preference[4]

Keynes points out that when a person makes a decision not to consume he does not necessarily make a decision to invest in a security or other earning asset. He may invest, it is true, but he has another alternative. He can hold his accumulations in the form of cash. On the face of it, this seems to be a poor choice, since he sacrifices thereby whatever interest he could be earning on an investment. And were there no uncertainty about the future, there would seem to be small reason for making such a sacrifice. In the world as it is, however, there are effective motives that will make the sacrifice of holding cash worth while.

These motives to liquidity preference, as Keynes classifies them are as follows:

1. *The transactions motive.* This expresses the need for cash to bridge the interval between the receipt of personal and business incomes and their disbursement.
2. *The precautionary motive.* This is the desire to hold cash for sudden emergencies or liabilities, and to take advantage of unforeseen opportunities of advantageous purchase.
3. *The speculative motive.* This moves people to take advantage of what they believe to be their superior foresight as to the future course of values; as when they hold security prices to be too high and turn their holdings into cash.

These motives, then, cause people to desire to hold cash; and the ruling rate of interest is a measure of the strength of the motive. Interest is the price paid to induce people to give up cash. As Keynes puts it, interest is not the reward of not-spending; it is the reward of not-hoarding. Consequently the interest rate is not the price which equilibrates the demand for capital with the supply of savings, as is assumed in classical theory; it is the price that equilibrates the demand for cash with the available quantity of cash. The transactions that dominate the money market are between persons who want cash and persons who are ready to buy securities or similar assets. These are the operations that determine rate of interest.

[4] J. M. Keynes, *General Theory of Employment, Interest and Money* (New York: Harcourt, Brace & Company, Inc., 1936), Chapter XIII, "The General Theory of Interest."

For all these reasons, the money market may not effectively equilibrate the fund of savings and the demand therefor for purposes of capital formation. The common assumption of the past that there is an automatic connection between the funds accumulated by one set of people and the funds spent on the means of production by another set of people must be given up. There is no such automatic connection. It might happen that, at the very time the community was increasing its accumulations for the future, the businessmen were launching an expansion of capital equipment; but this would be mere chance and is quite different from saying that the one change is a spontaneous reaction to the effects of the other. In short, the interest rate, at least for short periods of time, cannot be said to be an effective mechanism for bringing into equilibrium the monetary accumulations of the people and the demands for funds for capital expansion.

The importance of consumers' demand

Even if the interest rate were more effective than it is, the relation between the rate of accumulation and the rate of capital formation may still be distorted, because of the immediate effect of increased (or decreased) accumulation upon the volume of effective demand for the goods and services bought by the consumer. An increase in the rate of saving, for example, may in due time reduce the rate of interest, and this, in turn, may increase the businessman's use of funds in capital expansion; but the *immediate* effect is to reduce the total demand for goods and to disappoint to the same extent the expectations of the producers. As a result, expansion is more likely to be checked than encouraged, for a falling demand for the final output of production is hardly a favorable atmosphere for the expansion of productive equipment.

In the "orthodox" economic theories, there was no worry about the aggregate of effective demand. The demand that was apparently taken out of the system by the process of saving turned up again promptly through the investment activities of the entrepreneurs, who, as it were, restored the accumulations to circulation by putting them into the hands of workers in the capital-producing trades. Thus saving was only a transfer of activity from one kind of industry to another. But if the effect of increased accumulation is to *discourage* capital expansion, then the

total activity of society is not maintained. Instead, it is actually reduced, and the effect of accumulation is to bring on what amounts to a depression.

That is to say, the effective motive creating a demand for capital goods is the demand for the consumers' goods they are destined to produce. The demand for capital goods is not a direct demand but a derived demand, dependent for its strength on the original demand for consumption. It is not the interest rate but the state of this original demand for consumers' goods that is the deciding factor. It may be, therefore, as Moulton points out,[5] that society faces a serious dilemma. If it sets aside larger funds for capital expansion, it diminishes the incentive for businessmen to use them. If, on the other hand, it increases its scale of expenditures, it encourages producers to expand but reduces the available monetary capital with which to expand.

To put it in another way, the process of saving has two aspects. Seen from one side, it constitutes an addition to the supply of capital funds. Seen from the other side, it is a reduction in the immediate volume of effective demand. In its former aspect, through a lower rate of interest, it makes investment more attractive. In its latter, by reducing the sales expectations of entrepreneurs, it makes investment less attractive. In the one aspect, it reduces cost; in the other, it reduces demand.

Is business policy dependent on the rate of interest?

Thus there emerges a conflict of views. Those whose thoughts run in the older, more "orthodox" channels regard interest rate as the effective device causing entrepreneurs to make full use of the savings made available to them by the community. Those who have been influenced by the insistence on effective consumer demand regard interest as ineffective and see the real motive to the entrepreneurs' decisions in the variations of demand.

One would like to know which is, in fact, the more important as a factor in capital expansion or contraction, the rate of interest or the effective demand for goods. Common sense seems to lean toward effective demand as the important motive; and such current evidence as we have seems to bear out this attitude.

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[5] H. G. Moulton, *The Formation of Capital* (Washington, D. C.: The Brookings Institution, 1935), Chap. III.

The Harvard Graduate School of Business Administration has, since 1920, been accumulating a great collection of business cases illustrative of the problems facing business executives. Recently an analysis was made of this collection to separate out cases involving problems of expansion or contraction of output in which interest rates might have been a factor influencing decisions. There were 118 of these cases. In 91, interest rate was not mentioned as a factor in decision. In 27, interest rate was mentioned, but in only 10 was it regarded as a factor, and in none was it held to be a controlling factor.[6]

A group of investigators at Oxford University, through questionnaire and personal interview, set out to find what actually was the attitude of businessmen toward changes in the rate of interest. They found what perhaps might have been expected, that changes in short-time interest rates, while they might affect profits, seldom affect policy. Almost all the industrialists questioned indicated that the rate of interest was relatively unimportant as compared with changing anticipations of earnings.[7]

This evidence need not imply that changes in interest rates have *no* relation to expansion or contraction of investment expenditures. It presumably means that other influences, such as the loss of confidence in a slump, or the high level of enthusiasm in a boom, overshadow whatever influence interest rates may exercise. Even "changing anticipations of earnings" have to be measured by some standard, and the going interest rate would seem to be the "opportunity cost" that offers the appropriate comparison.

These practical conclusions have found some support in theoretical reasoning. Eric Lundberg, in the course of theoretical analysis of an economic system during a period of expansion, concludes that, whereas the conditions of the capital market are very important in determining investment in long-term projects such as the construction of railroads, for short-term projects the state of the consumers' demand is the dominating factor. He suggests that there may be two types of crisis, according to the dominant kind of investment. In one type of crisis, investment takes the form of capacity to produce consumption goods. The impulse to

[6] J. F. Ebersole, *American Economic Review*, March 1938, Supplement, p. 74.

[7] *Oxford Economic Papers* (Oxford: Clarendon Press), Number 1, Oct., 1938, pp. 14–31.

output is dependent on adequate consumers' spending, and the crisis is due to an excess of saving and a deficiency of purchasing power. The other type of crisis is marked by investment in long-time projects such as railroads. This expansion is then dependent on an adequately supply of savings rather than on the current demand for consumption goods, and the crisis is due to a scarcity of capital.

According to Lundberg, there is some, although not conclusive, evidence that the expansion of 1922 to 1929 in the United States was of the former type, and that the crisis was one of inadequate purchasing power. On the other hand, the crises in Germany in 1925 and 1928 were of the latter type, as were also the great expansions in prewar United States. In these cases, capital shortage was the precipitating cause of the downturn.[8]

One may fairly conclude that, even if the rate of interest reflected better than it actually does the respective pressures of the supply of current savings and the demand for investment by entrepreneurs, it would still be ineffective in bringing about the automatic adjustment of saving to capital formation which seems to have been more or less taken for granted.

As a consequence, disequilibrium is certain to arise whenever the decisions of the entrepreneurs to increase or decrease the scale of their investments do not happen to coincide with the decisions of the community to increase or decrease the scale of their accumulations.

Saving must equal investment

This disequilibrium can be resolved only by a process of events that changes the intentions of savers or investors (or both) so that they reach the necessary coincidence. For in the event, intend what we like, saving and investment must come to equality. Our intentions may diverge, but the result is equality.

Economists conceive of saving as that part of one's income that is not consumed, and saving in the aggregate is that part of the national income that is not consumed. As the national income is equal to the national output (they are two faces of the same thing) saving is represented by unconsumed output. But invest-

[8] E. Lundberg, *Studies in the Theory of Economic Expansion* (London: P. S. King and Co., 1937), pp. 254–255, and Appendix to Chap. X.

ment is unconsumed output also. It is that part of output that is not designed for immediate consumption. Thus saving and investment are two aspects of the same quantity and must, in the event, be equal; like sales and purchases, which, though the intentions of buyers and sellers may differ, must be equal in the event.

This equivalence was so obvious to economists in the past that they thought of the real savings of a nation as being found in its factories, its equipment, its tools, its inventories, its public buildings, and so on; and they thought of current savings of the people as the additions to this fund of goods "set aside" for the uses of the future. They thought of the capital market as the machinery, and the rate of interest the device, by which the current earnings were translated into and embodied in these specific forms.

But if the interest rate is not effective as a mechanism by which an increase of saving elicits the equivalent investment, and an increase of investment the equivalent saving, then some other process must bring about the necessary equality of saving and investment implied by their nature; some other process must resolve the disequilibrium that emerges when the intentions of savers and investors happen to differ. What this process is we will now examine.

Disequilibrium from an increase of saving

Suppose the community intends to increase the scale of its saving. This increase would come about ordinarily by leaving bank balances idle for longer periods of time, and amounts to a general fall in the velocity of circulation of money. If entrepreneurs have not been moved, at the same time, to make equivalent investment and so put equivalent money in the hands of wage earners and other income recipients, the result must be a fall in the effective demand for consumers' goods. If the entrepreneurs insisted on maintaining the scale of their output, then the result must be a fall in the general level of prices and an increased consumption of goods. As a result, what started out as a general increase of saving has no real effect. The scale of consumption is unchanged. The community, instead of adding to its wealth (which would have happened had the savings found their way into productive uses), merely maintains the scale of its consumption. The savings, in

other words, to use Robertson's useful phraseology, have not been "applied"; instead, they have turned out to be "abortive." [9]

It is not feasible for entrepreneurs to continue their output in the face of falling prices. The producers of consumers' goods are now suffering losses and will be moved either to contract their output or to reduce the level of wages and other costs. Unfortunately, this procedure will do them no good, for the spending power of the community is reduced by an equal amount. Unless the effect of this is to reduce savings or to cause the banking system to make credit so much cheaper as to stimulate investment even in the face of falling prices (neither of which is likely to happen), the entrepreneurs are no better off and will continue to be no better off, no matter what they do, so long as the community insists on its expanded rate of saving.

Thus there are some very curious effects arising from a tendency to save when active investment by entrepreneurs is not proceeding. The saver thinks he is adding to his wealth, but there is no addition to the national wealth. Each individual can save, but not all of us can save at the same time. When losses set in, each entrepreneur thinks he can help himself by restriction of output; yet, when all do this, they are in just as bad straits as before. In short, saving in itself has no virtue. Thrift can produce no wealth. As Keynes puts it in one of his more eloquent passages, "If Enterprise is afoot, wealth accumulates whatever may happen to Thrift; and if Enterprise is asleep, wealth decays whatever Thrift may be doing." [10]

Thus abortive saving sets up a process of deflation which feeds upon itself to the disruption of the whole productive process. In the meanwhile, anything which further discourages investment or further encourages saving aggravates the slump. If, as is common in depressions, a fear complex seizes upon the community so that it is moved to hoard its available means of payment, this must add to the trouble. If, also, the practices of business and government

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[9] D. H. Robertson, *Banking Policy and the Price Level* (London: P. S. King & Son, 1932), Chap. V, "The Kinds of Savings." This very acute analysis of different situations created by savings under various hypotheses deserves investigation by the student.

[10] *Treatise on Money*, Vol. II, Chap. 30, 149. The reader should not miss the amusing parable of the bananas, Vol. I, Chap. 12, Section 2.

in regard to sinking funds and amortization quotas cause them to continue to collect these at the levels of the previous boom and to hold them out of investment (a practice common enough, it would appear, in business), the result may be to prolong the slump indefinitely. The situation becomes even worse if the government is moved by thrift campaigns to reduce public expenditures to the lowest limits, for then the only counteracting source from which expenditure might be expected is blocked. "Financial prudence" may then become a serious obstacle to recovery.

An end could be put to this disastrous situation by a cessation of the saving practices of the community or such an outburst of investment by entrepreneurs as would restore effective demand for the output of industry by putting new money into active use. Indeed, the low level of income to which the depression has reduced the community may bring about these very things. Saving and "parsimony" cease to be possible. On the other hand, conditions favorable to investment gradually emerge. The need for replacements, the great ease of funds in the money market, and the lowering cost of production brought about by a general reduction of wage rates tend to encourage a revival of output, and with it some capital formation. With saving falling and the scale of investment tending to revive, the deflation ceases and equilibrium, although possibly on a low level of output, is finally restored.

Disequilibrium from increase in investment

Now let us see what happens when the business community is moved to increase the scale of its expenditures for capital goods—that is, increase the scale of capital formation.

This expansion must involve an available supply of funds, and implies either that the deposits of businessmen are moved faster (that is, that the velocity of circulation of money increases) or that the banking system is willing to increase the supply of credit available for business. If the community is not moved, at the same time, to increase the scale of its savings and so withdraw funds from active use, the result must be to increase the aggregate of effective demand for goods. The money drawn upon by the entrepreneurs is paid out in wages and other incomes, and is thus added to the total purchasing power of the community, and on our

assumption of no increased rates of saving, to the aggregate of effective consumer demand.

The result is an increase in the prices of consumers' goods and, because of the familiar lag of costs behind prices, an increase in profits, and a great encouragement to an expansion of output. Thus the increase of activity in the field of producers' goods brings about, in its turn, an increase in activity in the field of consumers' goods. This increase is a further encouragement to investment by entrepreneurs whose derived demand for capital equipment is greatly stimulated.

Thus a spiral of expansion is started, which develops without serious interruption as long as the investments of entrepreneurs continue to be carried on. Unless, before this occurs, full employment of resources has been reached, the expansion can be brought to an end only by an increase of saving, or by the resistance of the banking system to further credit expansion, or by some cause that so changes the expectations of entrepreneurs as to make them disapprove of further investments. If the urge to investment continues unabated, after full employment has been reached, then (again assuming the acquiescence of the banking system) the result is a general rise of prices that will continue as long as investment exceeds saving.

If now we look back over this process of contraction and expansion, we see that, in the event, despite the diverging intentions of the savers and the entrepreneurs, saving and investment prove to be equal. But this equality has been brought about not by the operation of the interest rate, but by an expansion or contraction of the general level of income. And this turns out to be a more formidable process than that visualized by the classical economists. For the expansion takes on the dimensions of a boom, and the contraction the dimensions of a slump.

The history of this country since 1929 is an illustration of these alternating possibilities. The general condition of the 1930's, with its prolonged depression, may be described as one in which investment failed to absorb the current flow of savings. The war expansion 1940 to 1945, based on the tremendous expenditures of the government, and the postwar boom beginning in 1946 with its rapid increase of private investment expenditures may be de-

scribed as situations in which investment including government expenditures tended to outrun the current flow of savings.

Thus we come to the conclusion that equilibrium is disturbed whenever the decisions of entrepreneurs in respect to investment and the decisions of the community in respect to saving and accumulation are not in harmony. This disequilibrium takes the form of the cumulative expansion of boom on the one hand and the cumulative contraction of slump on the other. Because the "classical" assumptions that this kind of disequilibrium is prevented from becoming serious by the operation of the interest rate have been disclosed to be unfounded, we have here an interesting possibility of accounting for business cycles through variations of saving and investment. This possibility will be explored in the following chapter devoted to the theories of the English economist, Lord Keynes, and some of his critics.

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THE THEORIES OF J. M. KEYNES[1]

WE HAVE SEEN in the previous chapter that the assumptions of what might be called "classical economics" in respect to the process of saving and investment are not borne out in practice. The translation of accumulations into investment and so into the incomes of the factors of production is not spontaneous. It is slow, uncertain, and unreliable. As a result, the belief of classical theory that society need not concern itself with variations in the rate of saving and investment is quite unfounded. These variations, in the conditions of actual life, turn out to be most important indeed, for, unless they happen to coincide in a fashion that is most unlikely to occur, they may be an impelling cause of booms and slumps.

The analysis of the problems associated with these variations in saving and investment owes much to the theories of John Maynard Keynes, the eminent English economist. Keynes is the most influential representative of the revolt against the classical theories in respect to saving and investment. Although this revolt was begun in his *Treatise on Money,* 1930, it finds its complete expression in his famous *General Theory of Employment, Interest and Money,* 1936, the influence of which on current eco-

[1] The literature on Keynes is very voluminous, and only a few suggestions can be made here. Mabel Timlin, *Keynesian Economics* (Toronto: University of Toronto Press, 1942) is a careful analysis of his theory. A broader study of the impact of Keynes is Lawrence R. Klein, *The Keynesian Revolution* (New York: The Macmillan Company, 1947). *The New Economics* (New York: Alfred A. Knopf, 1947), ed. S. E. Harris, includes a comprehensive series of essays on Keynes from all angles. A readable study of Keynes is *The Economics of John Maynard Keynes* by Dudley Dillard (New York: Prentice-Hall, Inc., 1948).

nomic thinking and on practical economic policy can hardly be overestimated.

The nature of equilibrium

Keynes starts with the proposition that the scale of output and employment at any time is determined by the decisions of entrepreneurs. It is they who decide to produce this or that kind of output; it is they who decide whether to increase or diminish output as a whole; it is they who decide whether to expand the volume of investment and purchase of capital goods. Their decisions obviously are based, except for sentimental reasons, upon their expectations of profits, which are, as Keynes put it, "the mainspring of change in the industrial countries of the world outside Russia."

There are certain conditions under which the entrepreneurs have no motive either to expand or contract the scale of their output. These conditions constitute a state of equilibrium. They occur whenever the expected income (or proceeds) from the output of a given volume of employment is just equal to the supply price of that output, the supply price being that volume of proceeds which will just make it worth while for the entrepreneur to supply the necessary employment. Higher expectations than this are an incentive to expand output; lower expectations, an incentive to contract output.

The aggregate proceeds that may be expected consist of two parts: the amount that the community spends on consumption, and the amount that it devotes (or plans to devote) to new investment. These two taken together constitute effective demand. Hence equilibrium exists whenever effective demand is just equal to the supply price of aggregate output.

In classical economics there is only one stable equilibrium of this sort—namely, where all resources are employed. If resources are not fully employed, competition for the employment reduces the terms on which they will be available and thus encourages expansion until conditions of full employment are reached.

Keynes holds that there are many possible positions of equilibrium, of which equilibrium with full employment is a very special case. Thus, for example, if, in a given state of equilibrium, the community decides to save more, then, unless this is accompanied by an equivalent increase in the amount devoted to investment,

the effective demand falls, and the output tends to be contracted. If equivalent investment does not take place (and the analysis set forth in the previous chapter indicates that there is no certainty that it will), then the current volume of output cannot be supported. Entrepreneurs then reduce the scale of their employment, and the total income of the community falls to a lower level. When this reduction reaches a level where the proceeds once more cover the aggregate supply price of the reduced output, a new equilibrium is reached. It is an equilibrium with less than full employment of resources, and it is maintained as long as the tendency to consume remains at its (relatively) low level.

Similarly, if the community directs a larger part of its income into the purchase of consumers' goods, then, unless this is accompanied by a fall in the amount devoted to investment (and again there is no reason to suppose this will occur), then the aggregate effective demand is increased, the sale proceeds exceed the supply price of output, and the entrepreneurs increase the scale of their production and employment. Thus the total income of society is increased until it reaches the level where the sale proceeds of the enlarged output no longer exceed the aggregate supply price of this output. This new equilibrium will be maintained also as long as the tendency to consume remains at its (relatively) high level.

Thus, there may be many equilibrium levels, some with high output and some with low. Of course, the real level cannot be *higher* than full employment of resources when any further expansion can only take the form of an inflationary rise of prices, but there is no reason to expect that it cannot be *lower* than full employment. Whatever the level may be, the total output of that level can be supported only provided the consumption of the community together with the current investment of the entrepreneurs is sufficient to absorb that output. Given the current rate of consumption out of income (what Keynes calls "the propensity to consume"), the equilibrium level of output must depend on the amount of current investment. This amount, in turn, depends on the inducement to invest, which thus becomes the prime mover in determining the scale of output of the community and the level of its employment.[2]

[2] J. M. Keynes, *General Theory of Employment, Interest and Money* (New York: Harcourt, Brace & Company, Inc., 1936), Chap. 3.

The marginal efficiency of capital

This inducement to invest and, therefore, the volume of investment at any time depend on the relation of what Keynes calls *the marginal efficiency of capital* to the current rate of interest.

The marginal efficiency of capital is the ratio of the expected yield of an additional capital asset over a period of years to the supply price of such asset (that is, the price that will just induce the producers thereof to supply it). In other words, it is the expected earnings of such assets expressed as a percentage return on the supply price.

The marginal efficiency of capital at any time, therefore, depends on the state of the entrepreneurs' expectations. It is raised by invention and innovation and by the expectation of rising prices. It is lowered by the expectation of falling interest rates, expressive of the willingness of lenders to take lower returns, and by any general increase in scope of investment that threatens to reduce the yield of capital goods at the same time that their supply price is likely to be increased. It is affected by the state of the entrepreneurs' "animal spirits," for much investment is made not merely as a result of calculation but under the stimulus of irrational optimism. Always it is subject to somewhat violent fluctuations, owing to the fundamental uncertainty of the world in which we live. We have but little means of knowing what will be the value or yield of capital in the future, so little that scientific basis on which to form any calculable probability is lacking. Consequently, we take the present as the guide to the future; we accept existing opinion, the community judgment, and the behavior of the majority as a correct indicator of prospects; and, although this is good enough while stability reigns, it exposes us to sudden and violent changes when our expectations turn out to be unjustified.

If, now, the marginal efficiency of capital corresponds to the market rate of interest, entrepreneurs have no motive to either increase or decrease investment. But if the marginal efficiency of capital exceeds the rate of interest, and as long as it continues to do so, entrepreneurs are moved to add to investment.

What happens when investment increases?

In classical economic theory (which assumes that in equilibrium all resources are fully employed), this additional investment would

not at the moment increase the aggregate income or employment of the community. It could take place only at the expense of consumption, the reduction of which is insured by the higher rate of interest that entrepreneurs would obviously be ready to offer. That is to say, full employment being assured, the volume of investment has no effect on the aggregate employment of the community; nor even, for the immediate future, on its aggregate income. It merely determines how much employment is to be found and how much income produced in one section of the productive mechanism as compared with the other. The actualities of economic life indicate that full employment of resources is not the normal situation. It is not necessarily to be found in equilibrium; still less is it found in recurring periods of transition such as the phases of the business cycle. As a consequence thereof, increase of investment need not be, and in fact is not, accompanied by a coincident decrease in consumption.

What really happens when investment increases is a coincident *increase* in consumption and an increase, therefore, in the aggregate of income and employment, the amount of such increase depending upon what Keynes calls "the propensity to consume," and which he defines as "the functional relationship between a given level of income and the expenditure on consumption out of that level of income."

We may distinguish between the average propensity to consume and the marginal propensity to consume. The average propensity to consume may be defined as the proportion of any given total income that the people plan to spend on consumption. The marginal propensity to consume is the proportion of an additional increment of income that the people plan to spend on consumption. If we designate consumption by C, and income by Y, then $\frac{C}{Y}$ is the average propensity to consume, and $\frac{\triangle C}{\triangle Y}$ the marginal propensity to consume.

When investment is increased, the money incomes of the factors of production are equivalently increased; and, if the total increase of income were spent (i.e., if the marginal propensity to consume were unity), a very rapid increase in employment would take place, each group of income recipients supplying income for the next until full employment is attained. As a matter of fact, the marginal

propensity to consume is almost certain to be less than unity. It is fundamental law, Keynes thinks, "upon which we are entitled to depend with great confidence both *a priori* from our knowledge of human nature and from the detailed facts of experience," that people increase their consumption as income increases, but not so much as the increase of income.

Over short periods of time, such as the business cycle, standards of living are relatively stable and if the primary needs of a family have been covered, an increase of income may induce a greater accumulation rather than a greater consumption. Hence a man "is likely to save the difference which discovers itself between his actual income and the expense of his habitual standard; or, if he does adjust his expenditures to changes in his income, he will over short periods do so imperfectly."

As a result thereof, spending does not increase *pari passu* with investment; income of successive groups of recipients does not increase so rapidly, and the total volume of income (and employment) due to investment is smaller than it otherwise would have been. Thus the rate of investment taken with the propensity to consume determines the total income of the community. To put it in another way, there is a definite ratio, given the propensity to consume, between an increment of investment and the resultant increment of total income; a ratio that Keynes calls "the multiplier" or, more exactly, "the investment multiplier." If this multiplier is k, then an increment of investment I will bring about an increment of income kI. If, for example, investment is $100 million and the multiplier 3, then the total increment of income due to the investment is $300 million.

Let us examine the multiplier in more detail.

The multiplier

When investment is first made, aggregate income is increased in all industries immediately affected. If the investment is house-building, then the incomes of all those engaged in building and in making or transporting materials are increased. This increase may be called the *primary* increase in income. Some of this increased income is spent on purchases of one kind or another, both by the wage earners affected and by the recipients of profits, interest, and other nonwage income. This development gives rise

to further income in industries affected (largely consumption industries), and this further increase of income may be called the *secondary* increase. Obviously, beyond that there will be *tertiary* increases, and so on, which, however, we may lump together under the general title of secondary increase. Of course, as long as there are factors of production unemployed, increase of aggregate income will be accompanied by an increase of employment.

Now, clearly, the sum of these secondary incomes (in the inclusive sense indicated) depends on the propensity to consume of the community as a whole. If all the additional income were promptly spent, the secondary income would increase very fast at each turnover, and a comparatively small rate of investment would lead to a state of full employment and maximum real income. If there still persisted an unrestricted urge to spend, the result from then on, because of complete inelasticity of supply, could be only an unlimited rise of prices (that is, inflation). If, on the other hand, the propensity to consume were so inflexible that no increase in consumption is induced by the primary increase of income, then there would be no secondary income or employment whatever; and the increase of investment would have minimum effects. These varying proportions of spending and saving the increased income determine the multiplier.

If, for example, of every increment of income $\frac{2}{3}$ is spent and $\frac{1}{3}$ is saved, then the total addition to income produced by the investment of \$1 is $\$1 + \frac{2}{3} + \frac{4}{9} + \frac{8}{27} + \ldots = \$3$. The ratio of the total added income to the volume of investment is 3 to 1, and the multiplier is 3. If $\frac{1}{2}$ is spent and $\frac{1}{2}$ saved, the multiplier is 2. If $\frac{5}{6}$ is spent and $\frac{1}{6}$ saved, the multiplier is 6, and so on.[3]

[3] This succession of spendings on the assumption of a known propensity to consume takes the form of an infinite geometric progression. If r is the fraction spent then the total income from an investment of $1 = 1 + r + r^2 + r^3 + r^4 - - - r^n$. The sum of this series is $\frac{1}{1-r}$. The multiplier, defined as the ratio of the total increase of income to the original investment, is, therefore, $\frac{\frac{1}{1-r}}{1} = \frac{1}{1-r}$. But $1 - r$ is the fraction saved, and the multiplier therefore is the reciprocal of the fraction saved.

This can be put in another way. If k is the multiplier and ΔY, ΔI and ΔC denote small increments of income, investment and consumption respectively, then $\Delta Y = k\Delta I$ and

$$k = \frac{\Delta Y}{\Delta I} = \frac{\Delta Y}{\Delta Y - \Delta C} = \frac{1}{1 - \frac{\Delta C}{\Delta Y}} = \frac{1}{\text{fraction saved}}.$$

Thus the multiplier depends on the propensity to consume, which determines the fractions saved or spent out of the increment of income produced by investment. This means that the smaller the additions to savings, the larger the multiplier; and the larger the additions saved, the smaller the multiplier. Hence spendthrift communities suffer wider fluctuations of income from variations in investment than do thrifty communities. On the other hand, in the event of a slump, a smaller increment of investment would bring about recovery in a spendthrift community than in a thrifty community. If a community varied its habits (although this is unlikely in short periods) so as to make savings relatively small in booms but relatively large in slumps, it would experience great fluctuations, booming expansions being followed by periods of prolonged stagnation, stubbornly resistant to all remedial action.

In actual life, the multiplier, although always exceeding unity, is not very great. If it were, we would be subject to much greater fluctuations of income (and employment) than we actually have. Were the multiplier large, even a small increase of investment would soon produce a condition of full employment, whereas a decrease in investment would bring about such a fall in demand that industry would almost cease to function. Possibly for England (at any rate, in depression), the multiplier would be no greater than 2. For the United States, it would likely be somewhat higher.[4]

What the multiplier signifies

It will be seen from the examples given that, whatever the multiplier may be, the aggregate of savings must equal the original investment. Thus, if ⅓ is saved at each turnover of income, then the total savings as the result of an investment of \$1 = ⅓ (1) + ⅓ (⅔) + ⅓ (⅔) + ... = \$1; and similarly for any fraction saved, or for any number of turnovers.[5] Thus if the process were stopped with the invested payments still in the hands of the first

[4] P. H. Douglas (*Controlling Depressions*, p. 125) puts it very close to 3. Colin Clark (*Economic Journal*, Sept. 1938) has recently estimated the multiplier in Australia at 2.08, and, in Great Britain, 2.07 in 1929–1933, and 3.22 in 1934–1937 (the balance of payments being regarded as investment).

[5] For examples see Joan Robinson, *Introduction to the Theory of Employment* (London: Macmillan & Co. Ltd., 1937), pp. 22–24. This book is a simplified Keynes for the general reader.

recipients the rate of consumption is zero and total saving equals investment. If the first recipients had saved ⅓ and spent ⅔, but the second recipients had not yet made any disposition of their income then the total saving equals ⅓ + ⅔, and again equals the original investment. And so on through the whole process. If one allows time for each recipient to dispose of his income according to his propensity to consume, and for the turnover of income to reach some approximation to completion, then the total savings during the period consist of a sum of decreasing increments that, as noted above, equals the original investment. What the multiplier fundamentally signifies, therefore, is that investment will cause income to increase to just the degree that will elicit the equivalent saving, the increase being large when the propensity to save is weak, and small when the propensity to save is strong.

In orthodox economics, as we have seen, investment and saving are brought to equality by the interest rate. Entrepreneurs with hopeful expectations and a corresponding urge to investment elicit the necessary savings by offering a higher rate of interest. In Keynes' economics what actually happens is quite different and quite unfamiliar. Investment elicits the equivalent volume of saving, it is true, not through a rise in interest rates, however, but through a higher level of income from which, owing to the stability of the propensity to consume, income receivers tend to save increasing amounts. And, furthermore, a higher rate of interest in this conjuncture would cause less, rather than more, savings, for it would depress investment, hence income, and finally savings. This situation is the reason why banks, following traditional policies of raising interest rates, can inflict such damage.

What happens when savings increase?

So far we have examined how savings are brought to equality, when the initiative is taken by entrepreneurs making investment. This equality is imposed also if the process begins with variations in savings. Independent or autonomous variations in savings (in short periods) are not likely to occur, but, if they do, and investment does not happen to increase at the same time, they serve merely to reduce income. An increase in savings, being equivalent to a decrease in spending, reduces the expectations of all entrepreneurs producing consumption goods. They tend, therefore, to

reduce their output and employment. This action reduces the income of the community and continues to do so until, in order to protect their customary standards of living, people reduce their savings back to the level justified by investment. An attempted increase of savings, under the circumstances, is a useless proceeding, for, there being no increase in investment, there can be no increase in saving. Any increase in savings is bound to be abortive.

Of course, if the rate of interest were effective, this outcome would be avoided; but it is not effective. It ought to be reduced to encourage investment. It is not reduced; or, if it is, is reduced too slowly. In the meanwhile, owing to the fall in consumption, the expectations of the entrepreneur in consumers' goods are worsened and his urge to investment reduced. Thus, before the fall in interest has occurred, he is experiencing losses in his output, and these will overshadow any favorable effect of the later reduction in interest. This circumstance is the reason why, even if the savings are used to purchase securities, and so raise their price and lower their yield (and the rate of interest), the action is ineffective. By this time, losses have set in, and the entrepreneur, to make good his loss, is now selling securities, with the result of canceling the purchase of the savers, counteracting the fall in yield, and rendering the rate of interest ineffective.

Investment sets the pace

The upshot of the argument is this. Investment and nothing else is the source of changes in output and employment. If investment is active, then either by choice or by compulsion savings will rise equally. Everyone can save or not save as he chooses, but the increase of investment will increase his tendency to choose saving.

If, on the other hand, investment is passive, then no increase in saving can be effective. Savings are reduced to the level of investment through the reduction of income imposed on the community by the restrictive actions of the entrepreneurs.

In other words, in modern society the initiative lies with the entrepreneur, not the saver. If the savers' decisions correspond with those of the entrepreneurs in their investments, then equilib-

rium is not disturbed. If they wish to save more or less than this volume of investment, then they will have to submit to a process designed to make them change their minds. If they try to save less, their incomes will rise until they save what the entrepreneurs have invested. If they try to save more, their incomes will fall until they again meet the decisions of the entrepreneurs. Somehow investment and saving must come to equality. Apparently the *only* way in which people can be made to increase savings when investment increases is by an increase of income; just as the only way in which they can be made to reduce their savings when investment decreases is by a reduction of income. It seems a very cumbersome process, but it is imposed on society by the ineffectiveness of the rate of interest.

Actual saving and investment cannot diverge

In short, saving and investment, in any community must be equal. If we define income as the value of current output, saving as the excess of income over consumption, and investment as that part of current output that is not consumed, then saving must equal investment.

Putting this in a series of equations:

income = value of output = consumption + investment
or investment = income − consumption
But, saving = income − consumption
Hence, saving = investment.

Thus it is fundamentally impossible to have a divergence of saving and investment. They are two faces of the same thing, just as what is sold is the same thing as what is bought. What we have been examining is the process by which, when the decisions of the community in respect to saving (and consuming) happen to diverge from the decisions of the entrepreneurs in regard to investment, they are brought into the harmony that the nature of the case imposes.

The case of business cycles

Although Keynes did not develop his theories as a description of business cycles, nevertheless business cycles can be described in the

terms of this process. Indeed, the cycle is a special example, over short periods of time, and with continually reversing movements, of this process in action.

In the language of the *General Theory,* the business cycle is essentially a fluctuation in the marginal efficiency of capital, relative to the current rates of interest. It begins with something that increases the attractiveness of investment, "a new invention, or the development of a new country, or a war, or a return of business confidence as the result of many small influences tending the same way," [6] and proceeds to that general increase in the volume of income and employment, which, as we have seen, is brought about by the operation of the multiplier.

The expansion which is thus set going is, of course, dependent on the acquiescence of the banking system, which must supply the new money that the additional investment requires. It is stimulated by the inflation of prices and profits that this new money sets in motion whenever the output of consumption goods is not elastic.

Under these encouragements, the boom may go to considerable lengths, even to the level of full employment of resources. But as time goes on, various discouraging factors come into play which put effective brakes on further expansion.

How expansion comes to an end

It is probable, Keynes thinks, that the "marginal propensity to consume," on the maintenance of which the inducement to invest is so greatly dependent, is subject to some decline as expansion goes on. Conventional habits of consumption may cause the community to spend a diminishing proportion of an increasing income. Furthermore, expansion increases the proportion of aggregate income accruing to entrepreneurs whose tendency to consume is probably below the average for the community. Again, as employment increases, potential savings which have been spent on private and public relief are released from these uses, and in all probability not completely spent. The fall in the propensity to consume may be counteracted for a time by the current rise in stock market values, which makes people "feel" wealthy enough to spend freely, especially in the well-to-do class that Keynes holds

[6] J. M. Keynes, *Treatise on Money,* Vol. 1, p. 302.

"may be extremely susceptible to unforeseen changes in the money-value of its wealth"; but this condition can only delay the inevitable decline.

The diminishing propensity to consume reduces the expectations of the entrepreneurs and lowers the marginal efficiency of capital. Other developments contribute to this result. The increase of general activity increases the pressure on the producers of equipment, raises the prices they will have to pay for the factors of production, and raises thereby the supply price of capital goods. At the same time the increasing supply of capital goods must lower their expected yields as competition for the sale of output threatens to lower the level of prices. It will be recalled that the marginal efficiency of capital is the ratio of the expected earnings of additional capital assets to their supply price. As expansion goes on both terms of this ratio move unfavorably to the entrepreneurs. This outcome will lead to certain disappointment. Expectations based on a yield of, say, 6 per cent face the bitter reality of 2 per cent. With this realization, the marginal efficiency of capital may suddenly collapse.

This unfortunate result might be postponed if the rate of interest were kept sufficiently low, for the inducement to invest depends on the relation of the marginal efficiency of capital to the rate of interest. But the rate of interest actually tends to rise. This rise in interest rates is due to a change in the desire of people to hold wealth in the form of cash, to which Keynes gives the name "liquidity preference." Liquidity preference is determined by the strength of the motives causing the public to hold cash. These motives are: (a) the *transactions* motive, or the need of cash for current personal and business exchanges; (b) the *precautionary* motive, to provide for sudden expenses and advantageous purchases, or to meet fixed liabilities; and (c) the *speculative* motive, to take advantage of changes in the prices of goods and securities. If these motives are strong, the interest has to be high to induce people to give up cash. If they are weak, interest can be low; and it is because interest is lower than the marginal efficiency of capital during a period of expansion that investment proceeds as it does. All the motives to liquidity preference grow stronger as expansion proceeds. Transactions demand more money; the future may look a little uncertain; and goods and securities may appear to be

valued too high. The bankers can counteract these forces by increasing the supply of money, but their concern with their reserves makes them less and less willing to do this. Hence interest rates will rise, and this rise at a time when the marginal efficiency of capital has begun to fall will play a part in bringing about the crisis.

As a result of these unfavorable changes, the optimistic expectations of the entrepreneurs fade suddenly away. The boom is over, swallowed up in the "sudden collapse of the marginal efficiencies of capital," and the slump sets in.

The slump

The reduction of investment that now ensues reduces employment and income in all primary activity, which in time reduces effective demand in secondary occupations and so on. The effect of this reduction (as in the case of increase) depends on the multiplier. If the multiplier is large, the reduction in aggregate income will be large; if it is small, the reduction will be small. If each group reduced its consumption with every reduction in income, the total reduction would bring activity very low. If, on the contrary, each group reduced its consumption less than the reduction in income, falling back on accumulated savings in order to keep up its standards of living, then the total reduction would not be so great.

In any case a reduction takes place, unless active steps are taken to uphold effective demand. This reduction may be very substantial, owing to the fears both of the community in general and of the business world. People are then led to "hoard"; liquidity preference becomes very high. As they try to add to their "savings," income continues to fall. In the meanwhile, confidence among businessmen will have ebbed away completely. The collapse in expectations and in the marginal efficiency of capital is so serious as to make net investment negligible. It is true that the rate of interest does, in due time, begin to fall, and possibly fall very low, as the supply of money, now no longer needed in business, becomes adequate even to the high liquidity preferences of the community. But even a low rate of interest may, for a while, be unattractive to entrepreneurs.

All this is exaggerated by the effects: (a) of the stock market

slump, which reduces still further the marginal propensity to consume; and (b) of the surplus stocks of goods now making their appearance, for until they are out of the way recovery is not possible.

In due time, stocks are cleared out of the way, the sooner because carrying costs are considerable, and price sacrifice is better than further interest payments. Furthermore, in some interval of time, obsolescence and decay create a relative scarcity of capital, and with this a rise in the expected profitability of producing capital assets. When these influences have begun to set in, the marginal efficiency of capital once more increases, and if interest rates continue favorably low, recovery proceeds, and the cycle is on the way through another swing.[7]

What the cycle amounts to

Thus the cycle turns out to be a fluctuation in the marginal efficiency of capital, as entrepreneurs find their expectations rising and falling. Variations in investment are what essentially cause and constitute the cycle. They make up the major swing, and they impose a corresponding variation in the incomes and employment of the people. The rise originates in all sorts of forces and continues until the income and hence the savings of the people are brought to appropriate levels. This level might be a new and stable equilibrium were it not that the very forces bringing it about have let loose factors of disintegration that check the hopeful expectations of entrepreneurs. Upon this, there follows a collapse of investment, and, as this is not accompanied by appropriate reduction in savings, the income of the community is brought down by contraction of output, until the savings have come to their necessary equality with investment. This position, too, might be one of relatively stable equilibrium, were not forces tending to restore higher levels brought into the picture.

All these cyclical phenomena are the outcome of the decisions of the entrepreneur who, by increase and decrease of investments,

[7] For an interesting estimate of Keynes' influence upon the theory of business cycles see Lloyd A. Metzler, "Keynes and the Theory of Business Cycles," in *The New Economics* (ed. S. E. Harris; New York: Alfred A. Knopf, 1947). See also J. W. Angell, *Investment and Business Cycles* (New York: McGraw-Hill Book Company, Inc., 1941). Mr. Angell's thesis that business cycles are essentially self-generating variations of investment brought about by the changing anticipations of entrepreneurs has many points of contact with Keynes' theories.

imposes a multiple increase or decrease in the income and employment of the community.

But the entrepreneur of the *General Theory* is not quite the masterful agent of change that sometimes stalks through the economic picture. He may still be the agent of change, but he is no longer masterful. True, he thinks in terms of expectations; but his expectations never reach very far ahead. He really has little capacity for foresight, in general being content to hope that present conditions will continue. Because of his uncertainty in forecast, his expectations are always precarious and subject to violent change, imposing thereby great fluctuations in investment, income, and employment. He is much affected by variations in animal spirits, and greatly dependent on a favorable political and social atmosphere. Lacking this, he is likely to undergo a "crisis of sentiment," and is, for long periods of time, quite unable to proceed with any boldness whatsoever. He is unusually dependent on the state of consumption and continually wonders what shape the propensity to consume is about to take. For this reason, he thinks much more in terms of effective demand than of cost of production. Anything that seems likely to change effective demand apparently affects him more seriously and more quickly, than anything that would seem likely to reduce his cost of production. He is particularly sensitive to increases of saving, for these reduce his expectations by reducing effective demand; and he is apparently quite unable to see that saving might encourage investment by reducing interest and so raising the value of capital.

Are we to have chronic depression?

This timidity of the entrepreneur may be understandable enough in the conditions that have surrounded the world since the onset of the great depression, but, if it is going to be a characteristic of the modern businessman, we may be in for a rather disagreeable time. The lack of enterprise of the entrepreneur in the face of the saving habits of the modern world is so serious as to threaten us with chronic underinvestment and a persistent danger lest society be hung up for long periods in a state of underemployment, where, despite equilibrium, resources are not fully employed, and where it is only too true that there is "poverty in the midst of plenty."

then unsold inventories will emerge in equal amounts. This is the investment that equals the additional saving.

Some may doubt whether this is the ordinary "common sense" way of describing what has happened. These situations are not positions of equilibrium. The workers will not continue to save all their income. The businessmen will not continue their previous scale of purchases. We are not at the end of the process. Hence definitions that make saving and investment equal at all times may not be as illuminating in respect to a process of expansion or contraction as definitions of saving and investment that are consistent with their temporary divergence.

For these reasons, critics of Keynes have offered alternative definitions of saving and investment, which we will now examine.

Active and passive investment

Mr. Hawtrey suggests that "there is a sense in which saving and investment, suitably interpreted, while not identical, do tend to equality." The clue to the problem lies in the distinction between "active" and "passive" investment.[11]

Investment, in general, is the excess of output over consumption. It is unconsumed wealth. As the total of unconsumed wealth is obviously identical with the total of saving, there is an identity between saving and investment. Active investment includes only that part of unconsumed wealth that is *voluntarily* acquired, under the inducement to invest which operates when the yield of investment outweighs the rate of interest. There is no reason to suppose that it is equal to the total of unconsumed wealth which is saving.

If active investment is not equal to saving, note what happens. If it falls short of saving, some part of the increment of unconsumed wealth (all of which must be held by someone) will not be acquired voluntarily—that is, there must be an involuntary accumulation of unsold goods. This accumulation is "undesigned" or "passive" investment. It represents the difference between total investment and saving. If active investment exceeds saving, then the excess is represented by "undesigned" or "passive"

[11] R. G. Hawtrey, *Capital and Employment* (New York: Longmans, Green and Company, 1937), pp. 176–180.

disinvestment (or, alternatively, by negative passive investment). That is to say, stocks of unsold goods undesignedly decline.

When active investment thus differs from saving, a cause of disequilibrium is at work that brings about various (cumulative) changes. An increase of passive investment causes a decrease of productive activity and probably a fall in prices; an increase of passive disinvestment, the reverse. This passive investment is the real cause of change, the real factor which increases or decreases income until active investment and saving once more are equal. As long as active investment and saving are equal, equilibrium endures.

Plans and realizations

A second variation on Keynes' definitions, with some resemblances to that of Hawtrey, has been expounded by Bertil Ohlin, who represents what he calls the "Stockholm Theory of Savings and Investments." [12]

Ohlin's theory, which appears to be the accepted approach of Swedish economists, is based on the difference between anticipations or expectations and realizations; or, if you like, between plans and results. The behavior of today is based upon the expectations of the future. Entrepreneurs base their plans for investment on their profit expectations. Consumers base their plans for saving, and hence the level of consumption today, on the expected income of the future. These are planned savings and planned new investment, and the plans are actually carried out by the savers and investors. The savers determine their consumption, and the entrepreneurs their business expenditures, on these plans.

Now there is no reason to suppose that these planned savings and investments are equal. Indeed, every probability indicates that they are not. As Keynes himself has shown, it is most unlikely that the expectations of two different groups looking at the future from two widely different angles would be the same. But the point is, they must be equal if realizations are to be in harmony with expectations. If they are unequal, then a process is set in motion which makes realized income differ from expected income,

[12] B. Ohlin, "The Stockholm Theory of Savings and Investment," *Economic Journal*, March and June, 1937.

hence realized savings from planned savings, and realized new investment from planned investment. When the process is over, realized savings and realized investment are equal; for if they are not, the process goes on until equality is reached and equilibrium attained.

Thus suppose that profit expectations rise and the volume of investment expands with planned savings unchanged. What is the result? The community, in general, finds that it has a larger income than it had expected. Realized income exceeds planned income. That is to say, the community's income exceeds its expenditure by a larger amount than planned. Thus savings in realization exceed anticipations, and they are equal to the volume of investment.

Obviously, as a result of these realizations, new plans are made by the entrepreneurs and the savers. If they happen to coincide, so that planned investment equals planned savings, then no further expansion can take place. If they again differ, and if again planned investment exceeds planned savings, then total purchases and total income continue to grow, incomes continue to increase, and so on, until coincidence of plans brings about equilibrium.

Similar but opposite results come about when planned investment falls below planned savings.

In fine, planned savings and investment may and do differ; realized savings and investment are equal by definition. To use Ohlin's phraseology, investment and savings *ex ante* may differ; investment and savings *ex post* must be equal.

Keynes and Ohlin thus offer alternative ways of describing the same process. In general, they are in agreement. Both agree that the expectations of the entrepreneur are the dominant factor of change. Both apparently agree that a process of income increase or decrease set in motion by changes of new investment is the means by which equality of savings and investment comes about. Both would agree that forced saving is not the appropriate term to apply to the increased saving that tends to accompany an increase of income. (The increase is unexpected and unplanned, it is true; but is hardly "forced." Perhaps "unintentional" is the right word to use.) But Ohlin's *ex ante* and *ex post* concepts seem more accurately to describe the actual process of change than Keynes' somewhat ambiguous terminology.

Robertson's picture of the process

The proposition that Keynes' method is better adapted to show the outcome of a process than the process itself is defended by D. H. Robertson, who offers an alternative method of approach adapted to show the process and for this purpose retains the divergence of saving and investment which seemed to illustrate this so conveniently.[13]

Robertson holds that incomes received at any time are not immediately disposable. There is a time lag between the receipt and disposition of income. He conceives the economic process as going through a series of short periods or slices of time sufficiently short as to be "homogeneous," meaning that no important changes take place within them. These periods of time he calls "days," the principal characteristic of which is that income received during a given "day" is not available for disposal during that "day," but only on the following "day." This means that decisions in respect to the disposal of current income, which will determine whether it is to be used for expenditures or for addition to money balances, really pertain not to the income received on that "day," but to the income received on the previous "day." Saving, then, which in any definition seems to be the difference between income and consumption, is, in Robertson's scheme, the difference between yesterday's income and today's expenditure.

Now if income is not increasing or decreasing, this division of "days" has no particular significance, for the income of any day will equal that of the previous day, and income earned or received in any day is equal to disposable income.

And under these circumstances, which might be regarded as a condition of equilibrium, saving and investment must necessarily be equal. But if, for example, income is increasing, then income received in any day is greater than the disposable income of that day. This situation can come about by an increase in the rate of investment. And, since the income of yesterday, by hypothesis, must be insufficient both to purchase today's consumers' goods and to supply the funds for the increased total of investment, the

[13] D. H. Robertson, "Saving and Hoarding," *Economic Journal*, September, 1933. See also his review of Keynes' General Theory in *Quarterly Journal of Economics*, November 1936.

new investment must be financed by the grant of additional credit by banks, or by "dishoarding."

The increase of income thus occasioned is not, however, disposable income and does not increase the volume of spending and saving on that day. Hence investment has increased over saving. And as long as the expansion goes on, borne up as it will be by the rise of prices and profits consequent on the increased flow of money income, the excess of investment over saving as Robertson defines them, will continue.

Similarly, if income is falling, investment is less than saving, and continues to be as long as income falls.

Thus, as Robertson sees it, the disequilibrium between investment and saving is a convenient way of throwing light on the expansion and contraction that constitutes the business cycle. Definitions, of course, are matters of convenience, not principle. But convenience is useful, and Robertson and other critics of Keynes hold their own definitions to be more convenient. The definitions in the *General Theory* seem to be more appropriate to a succession of static equilibria than to a process of change such as the business cycle. They show what has happened after the event, rather than the happening in process. Because Keynes is more interested in *results* than in *causes,* Robertson's definitions may be more fruitful in locating the impelling factors of change.

17

GENERAL CONCLUSIONS ON CYCLE THEORY

The conflict of theories

The survey of business cycle theory to which the chapters of this section have been devoted reveals how complex are the forces which seem to make for cyclical change. Some of these are originating causes coming from the outside and making cycles seem a series of isolated but similar episodes. Others are the cumulative responses that any stimulus elicits from our business system and which, once started, seem to generate themselves in endless succession. Some forces are active, like invention, imposing new data on business; others are passive, but indispensable to expansion and contraction, such as an elastic currency. Some are physical, like weather changes; some psychological, such as the waves of optimism and pessimism that accompany boom and depression; some "institutional," such as the tendency of wages toward rigidity or the "stickiness" of some prices in the presence of a degree of monopoly.

Our survey of cycle theories further shows by what diverse routes one can develop a plausible explanation of the cyclical process. Concentration on some particular aspect of business behavior has made possible the production of one explanation after another, each reasonably convincing and consistent. As Robertson humorously puts it, "in the deathless words of the Dodo, everybody has won and all must have prizes."

It must be admitted that this agreeable competition has brought forth an embarrassing plenitude of explanations, even in areas of apparent agreement. Thus current economic opinion tends

to describe the cycle as a cycle of investment. Consumption expenditures seem to be relatively stable, varying with income rather than independently. The variable factor in the economy is investment, which is fluctuating and volatile to a degree. The cycle may therefore be described as a variation in investment together with induced variations in consumption.

But here agreement ends. The excessive fluctuations in the production of capital goods that are the sign of variations in investment are disclosed in the statistical record. Why these fluctuations occur are another matter. They have been attributed to: (1) an excessive tendency to save; (2) "forced" savings extracted from the people by an elastic currency; (3) the result of increased profits in a period of rising prices; (4) bursts of invention: (5) excessive additions to equipment during a period of gestation; (6) the principle of acceleration; and (7) all the multitudinous factors affecting the expectations of entrepreneurs as expressed in the marginal efficiency of capital.

It may be, of course, that these apparent contradictions really mean nothing more serious than differences in emphasis among the numerous factors that operate in our intricate economic mechanism. Were this the case, it should be possible to achieve a reasonable synthesis of these various approaches into a comprehensive and convincing explanation.

Haberler suggests that, although there is much dispute as to the determinants of the upper and lower turning points in the cycle, there is a considerable measure of agreement as to the nature of the cumulative process of expansion and contraction.[1] Let us examine this in detail.

Probably all would agree that expansion and contraction are cumulative processes. How this cumulative process gets started is a controversial issue, but once under way it seems established that it derives from the joint operation of the following causes: (1) the interrelation of all business enterprise via prices, markets, finance, ownership, and so forth; (2) the active or passive coöperation of a banking or monetary system capable of supplying an elastic currency; (3) the principle of acceleration; and (4) the profit inflation or deflation arising in an institutional setting which

[1] G. von Haberler, "Some Reflections on the Present Situation of Business Cycle Theory," *Review of Economic Statistics,* February 1936.

causes certain costs, especially interest and wages, to lag behind prices of commodities. These various forces make for self-reinforcing expansion and contraction.

Turning points, however, offer more difficulty and occasion much more disagreement. In respect to the downturn, this much is agreed: that, although outside "accidental" causes, such as bad harvests, wars, and so on, may be important on particular occasions, expansion engenders within itself the forces that in any event will bring it to an end. Self-reinforcing forces are finally overcome by self-limiting forces. In this broad sense, the cause of depression is boom. But here agreement ceases. Some hold the monetary factor responsible, as bank credit reaches its inevitable limits. Others see the problem in maladjustments of production, either vertical or horizontal, that strain our system to breaking. Some believe we save too little and spend too much, so that investment outruns available capital. Others think we save too much and spend too little, so that investment outruns effective demand. Still others see the fading of entrepreneurs' expectations as lagging costs, which made excess profits possible, now begin to close the gap and make them disappear.

The upturn after depressions is an even more formidable problem for the theorists, for, whereas the downturn is commonly attributed to self-limiting forces developed in expansion, even this measure of agreement is lacking in respect to the upturn. Some hold that such favorable forces as are generated at the end of a depression are not powerful enough to bring about recovery. To their minds, recovery is not a self-generating process. Instead, it must await the appearance of some "starter" or originating force capable of lifting the economic system out of stagnation.

The result is disagreement both as to theoretical explanations and practical precepts. On the one side are those who hold that depression itself gradually generates the forces capable of overcoming deflation and bringing about recovery. The fall of interest rates, the slow but sure reduction of wages, the restoration of reasonable relations between various prices, the exhaustion of consumers' goods on hand, the need of equipment replacement—all these restore the expectation of profit and begin a revival of production first by the bold then by other entrepreneurs. The rest is cumulative expansion of the familiar kind.

On the other side are those who, although admitting that these developments are the necessary foundation for recovery, see no permanent revival therein. Production may recover to some degree, but only in a sort of rebound from the low level of depression; and there it will stay until a new impulse from without, not conditioned by the weak forces of the system itself, comes to make a real revival possible. Inventions, increased agricultural output, wars, new gold, and their like must appear to begin a new cycle.

These divergent views, moreover, impose different ideas of appropriate economic policy. Self-generation theorists, thinking in terms of "natural" recovery, tend to oppose governmental interference to end depression; or, if they consent to any measures, they are such as will merely reinforce what they believe is tending to come about in any case. Hence, even conservative opinion supports central banking policy to ease the money market and lower rates of interest. Those who have no such faith in self-generating recovery impatiently await the force from without that is to solve the riddle of revival. When this force is slow in coming (and its coming seems certain to be capricious and subject to no rules of forecast), they tend to demand government interference to hasten the end of depression, making public works, or inflation, or a similar governmental instrument, the substitute for the lagging starter. Thus, when the low level of agricultural fortunes that coincided with the great industrial depression of 1929–1932 removed one of the presumed traditional starters for a new cycle of prosperity, and when, further, no great new industry seemed to be in sight to give the impetus to revival that railroads, electric power, and automobiles had given in the past, then a great demand arose for government intervention that culminated in the recovery program of the New Deal. The disputes this program has occasioned even in professional economic circles are proof enough that the causes that make for recovery are still pretty much an unsolved riddle.

The difficulty of statistical verification

It might be thought that empirical investigation would throw light on the validity of any given cycle theory and enable one to determine which of many theories is valid. "Look and see" is

good advice to follow in testing any hypothesis. But the difficulties involved in the task of verification are most formidable; formidable enough even for the explanation of a single cycle, much more so for a theory of cycles in general.

For example, take the crisis of 1929. What does the statistical evidence have to say about the cyclical behavior that led to this specific crash?

It is argued, for example, that the preceding boom was a typical investment boom that collapsed, not because of inadequate consumption, but because of shortage of capital. If this be true, then producers' goods industries should show the first decline. What are the facts in regard to this important point?

H. G. Moulton states that no decline occurred in the important indexes of construction before October 1929 with the single exception of residential building.[2] Yet F. C. Mills puts 1928 as the peak for practically all construction, and 1927 as the peak for factory and commercial buildings, although the figures were nearly as high in 1929.[3] J. M. Clark, having in mind durable goods, it is true, asserts that the decrease in consumption goods preceded that of other industries.[4] S. H. Slichter states that producers' goods led down in 1926 and probably in 1929, but regards the whole evidence as inconclusive.[5]

Again, one might seek confirmation of the underconsumptionist theory that the crash of 1929 was due to inadequate consumption.

One version of this theory finds the source of trouble in the failure of investment to offset the flow of savings. Would it not be possible to discover statistical evidence to support this hypothesis?

Actually it is not feasible to locate statistically the cause of a downturn in an excess of (planned) saving over investment. We have no *ex ante* data. Everything we have is *ex post*. And *ex post* savings and investment are always equal. If, for example, in a given period consumption did not rise *pari passu* with output,

[2] H. G. Moulton, *The Formation of Capital* (Washington, D. C.: The Brookings Institution, 1935), p. 56.

[3] F. C. Mills, *Economic Tendencies* (New York: National Bureau of Economic Research, 1932), pp. 265–267.

[4] J. M. Clark, *Strategic Factors in Business Cycles* (New York: National Bureau of Economic Research, 1934), p. 113.

[5] S. H. Slichter, "The Period 1919–1936 in the United States," *Review of Economic Statistics*, February 1937.

indicating a rise of savings, there would emerge in the first instance an increased increment of inventories, which would be an equivalent increase in investment. It is true excessive inventories would then be a symptom of an unbalance of (*ex ante*) saving and investment, but there is apparently no reliable evidence that inventories in the period approaching the crisis of 1929 were excessive. The following table indicates this fact:

	Index of Manufacturing Production	*Index of Manufacturers' Stocks*
1922	100	100
1923	112	108
1924	106	118
1925	118	118
1926	125	122
1927	125	129
1928	132	133
1929	140	138

[The index of production is from F. C. Mills, *Economic Tendencies* (1932), p. 250. The index of stocks is from the United States Department of Commerce.]

Underconsumptionists commonly find the source of trouble in wage payments not keeping pace with the value of output. Let us see what the facts are in this regard. Professor Douglas, supporting this hypothesis, quotes from the Census of Manufactures to show that both wages alone and wages and salaries together had been falling relative to value added in manufacture. Here are the tables:[6]

Year	*Wages as a Percentage of Value Added by Manufacture*	*Wages and Salaries as a Percentage of Value Added by Manufacture*
1919	42.2	
1921	44.7	
1923	42.6	53.4
1925	40.1	51.0
1927	39.3	51.0
1929	36.4	47.7

So far as it goes, this evidence seems to support his point.

But the purchasing power of the masses of the people does not

[6] P. H. Douglas, "Purchasing Power of the Masses and Business Depressions," in *Economic Essays in Honor of W. C. Mitchell* (New York: Columbia University Press, 1935), pp. 123–124.

come merely from manufacture. It arises from all enterprise, and it is quite possible that the apparent (relative) decline in manufacture is offset by (relative) increase in other fields. That this may be so is indicated by the percentage which wages and salaries are of the national income. This percentage shows no such decline as is found in data drawn from the limited area of manufacture.

The following table is from the estimates of the Brookings Institution:[7]

Year	*Wages as a Percentage of Total Income Produced*	*Wages and Salaries as a Percentage of Total Income Produced*
1922	41.2	63.3
1923	42.0	62.7
1924	41.5	63.6
1925	40.5	61.7
1926	41.8	63.8
1927	41.3	64.6
1928	40.0	63.5
1929	42.1	65.1

This more comprehensive picture gives no support to the supposition that either wages or wages plus salaries were not keeping pace with output as a whole.

Possibly the discrepancies which appear in the evidence in respect to 1929 arise from faulty statistical data and will disappear with more adequate knowledge; but even then the problem of verification will remain. It is not enough to establish causal factors in a particular cycle. What we want is to verify a theory for cycles in general. Cycle theory aims to transcend the individual cycle and the specific peculiarities which surround each instance. It must discover the common and universal element in all cycles. It is the typical, not the individual, cycle that it aims to explain; and its validity must be established by other means than the investigation of particular cases.

Correlations not a proof of causation

The favorite means of verifying such general causation is to find whether there appears to be any statistical correlation between the supposed causal factors and the actual industrial fluctuations recorded over some considerable period of time. If a

[7] Leven, Moulton, and Warburton, *America's Capacity to Consume* (Washington: The Brookings Institution, 1934), p. 158.

significant correlation is discovered, it will be assumed that a relation has been established, and some light thrown upon the process of causation; but establishing a relation throws no light upon the relation of cause and effect. For example, it is possible to discover a high degree of correlation between variations in the volume of bank credit and variations in industrial output. But whether this is because changes in bank credit cause changes in output or, on the contrary, because changes in output move bankers to equivalent changes in the issue of credit, the statistical relation in itself does not enable us to say.

Furthermore, the correlation established between two sets of changes may arise because both are joint effects of some common cause. For example, there is evidence of a correlation between the yield of crops and the variations in industrial activity; and it is commonly deduced therefrom that agricultural changes affect business and are a cause of cycles. But this possibility is not the only one. Both the yield of crops *and* the variations of industrial activity may arise from changes in meteorological conditions, which affect, at the same time, the production of crops *and* the vitality and efforts of businessmen.

Sometimes it is held that, if the correlation is fortified by an established lag or lead, so that one set of changes constantly leads another, the leader may be assumed to be the causal factor, since cause comes before effect; but even this is not necessarily true, for if there is any degree of anticipation, expected occurrences will bring about their effects in advance of their cause. Thus, although an expansion of bank credit may be found regularly to precede an expansion of industrial output, this fact may be due to the expectations of businessmen, who, anticipating a rise in demand (the real cause of expansion), arrange their bank credits in preparation therefor.

The difficulty of interpreting the significance of lags and leads can readily be illustrated. Suppose it were found that the output of producers' goods tends to decrease before the output of consumers' goods decreases, what might this be supposed to mean? (a) It might mean that direct causes were at work pressing on the producers of capital goods (say, a rising rate of interest) so that they were led to reduce their output, reducing incomes of their work people and so bringing about a reduction in demand for and output of consumers' goods. This interpretation seems to refute

the underconsumptionist theory. But (b) it might mean that a coming fall in consumption was anticipated by businessmen, who reduced their output in advance. Or (c) it might mean merely the operation of the principle of acceleration whereby, although consumption was increasing absolutely, its rate of increase was declining, with consequent absolute fall in the demand for and output of producers' goods. Either (b) or (c) would be consistent, as (a) is not, with underconsumptionist theory.

We are forced to conclude that, in the present state of our knowledge, neither logical consistency nor statistical verification will enable us to choose with confidence between the important, and to some extent contradictory, theories of the cycle now offered. It may be that these apparent contradictions, as has been pointed out before, can be reduced to differences in emphasis among the numerous factors that coöperate to make the cycle. Or it may be that despite the similarity in general pattern, each cycle is an individual with its own set of effective forces in operation. So that, for example, whereas this cycle shows a pattern of underconsumption, that cycle appears to be dominated by a scarcity of capital. Or possibly an eclectic explanation, incorporating all the various factors that valid theoretical analysis has brought to light, may serve both to describe the typical cycle and to exhibit those strategic factors through which stabilizing control might be attempted with reasonable chance of success.

Even those who would regard these views as inadequate and unnecessarily skeptical might be willing to accept them as a useful but tentative position until persistent research into the behavior of cycles and continued exposure of the possible explanations to rigid logical sifting finally establish, for the generality of reasonable men, an acceptable explanation of these baffling phenomena.

Suggested Readings on Part II

The following books give systematic accounts of the various theories:

G. von Haberler, *Prosperity and Depression,* 3rd Edition (Geneva: League of Nations, 1941), Part I. The most comprehensive and up-to-date survey available.

A. H. Hansen, *Business Cycle Theory* (Boston: Ginn and Company, 1927). An excellent analysis of the state of cycle theory before the great depression.

A. L. Macfie, *Theories of the Trade Cycle* (London: Macmillan & Co., Ltd., 1934). A useful, brief analysis devoted largely to English theories.

W. C. Mitchell, *Business Cycles, The Problem and Its Setting* (New York: National Bureau of Economic Research, 1927), Chapter I. Admirable, succinct summaries of current theories. Interesting classification.

Readings in Business Cycle Theory, selected by a Committee of the American Economic Association (Philadelphia: Blakiston Company, 1944). A valuable selection from the economic periodicals. Also comprehensive bibliography.

A Survey of Contemporary Economics (ed. Howard S. Ellis), Chapter 2, "Employment Theory and Business Cycles," by William Fellner, (Philadelphia: Blakiston Company, 1948). An analysis of contemporary developments in theory. The whole work is sponsored by the American Economic Association.

Thomas Wilson, *Fluctuations in Income and Employment* (London: Sir Isaac Pitman and Sons, Ltd., 1942). Part I of this book has an excellent review of trade cycle theory.

The following books cover a somewhat more restricted field:

H. S. Ellis, *German Monetary Theory, 1905–33* (Cambridge: Harvard University Press, 1934). The most available account of German theory on business cycles.

R. J. Saulnier, *Contemporary Monetary Theory* (New York: Columbia University Press, 1938). These are studies of Hawtrey, Robertson, Hayek, and Keynes, in whose theories monetary and business cycle problems are closely interwoven.

A. H. Hansen, *Full Recovery or Stagnation* (New York: W. W. Norton & Company, Inc., 1938). Part One of this series of studies is devoted to a critical study of Keynes, Harrod, Hayek, and other recent trends in cyclical literature.

The following books, although not devoted to a review of cyclical theory, are so eclectic in treatment and cover such wide ground as to be valuable introductions to theory.

A. C. Pigou, *Industrial Fluctuations* (London: Macmillan and Co., Ltd., 1927), Part I, "Causation." One of the best analyses of the part played by various forces in making for the cycle, by a leader in English economic thought.

D. H. Robertson, *Banking Policy and the Price Level* (London: P. S. King & Son, 1932). Short and compact, this little book covers a great area of theory and has had no little influence.

For more detailed accounts of the theories examined in this part, the reader is referred to the works listed in the several chapters.

Part III

Stabilization

INTRODUCTION

The Problem of Stabilization

THE THEORIES SET FORTH in Part II, however much they differ one from the other, indicate that business cycles are an inherent characteristic of private enterprise economies, as they have operated in the past. They are so deeply embedded, indeed, in the economies that it is only lately that systematic thought has been given to the possibility of stabilizing policies.

Of late years, however, the evils of unemployment, and the losses to all classes of society from fluctuating incomes and prices, have given a great impetus to programs of stabilization. And it would not be far wrong to say that today all democratic countries set before themselves the goal of high and stable levels of employment. The maintenance of high levels of employment has come to be almost the principal issue between free enterprise and socialistic economies; so much so that no mature society seems willing to go on enduring the varying fortunes of boom and slump, without making an effort to reduce them to some reasonable stability.

To demand stability is, however, not necessarily to achieve it, or to achieve it without formidable cost. It may be that cyclical fluctuations can be reduced to unimportant dimensions, without sacrificing the essential virtues of private enterprise. It may be that the measures required to bring about stability will be incompatible with a private enterprise society. In any case, stability is not likely to be attained without some cost. Stabilizing procedures raise problems of their own. And the next stage in our study is to scrutinize the principal measures by which it is proposed to achieve stabilization; to lay bare the problems involved in their use; and to assess their cost, in terms of effects on the economy as a whole.

This is the subject matter of Part III.

The stabilization measures analyzed in this part fall into three groups.

Monetary and banking controls

These controls consist of all measures designed to control the volume of money and, by this means, to stabilize both output and the price level. Those who attribute the cycle to expansions and contractions of the money supply would expect a stabilizing monetary policy to be an adequate remedy for booms and slumps. Even those who find the source of instability elsewhere, as in capital innovations, would readily admit that monetary forces exaggerate cyclical fluctuations and should be controlled.

Monetary regulation is discussed in Chapters 18, 19, and 20.

Fiscal policy of governments

Governments, through their fiscal operations, have a powerful weapon of stabilization. By appropriate anticyclical variation of expenditures on public works and in other appropriate areas, the government may be able to offset undesirable variations in private investment or consumption. By adjustments of taxes on persons and on corporations the government can increase or decrease the total available income of the people, and encourage or discourage its use for consumption or investment.

The details of these policies, the problems they raise, and their net effectiveness are discussed in Chapters 21, 22, and 23. Chapters 21 and 22 deal with public expenditures; Chapter 23 with the problem of stabilizing the total volume of private consumption.

Reduced rigidities of wages and prices

It is not claimed, as a rule, that making prices and wages flexible will make a stable society, but it is thought that inflexibility of wages and prices over wide areas may contribute substantially to cyclical variations, especially contractions, and that greater flexibility of wages and prices might make measures of monetary and fiscal control more effective.

These problems are analyzed in Chapter 24 on wages and Chapter 25 on prices.

The section ends with some brief remarks on the limitations of a stabilizing policy in a society based on private enterprise and investment.

18

MONETARY MANAGEMENT: CONTROL THROUGH BANK POLICY[1]

ALL THEORIES OF THE cycle recognize the importance of variations in the supply of money. In some theories, the elasticity of the money supply as evolved by banks is held to be the active cause of industrial fluctuations. In all theories, it is regarded as a necessary condition of industrial expansion, without which disequilibrating impulses would be ineffective. Even where the entreprenеur is the hero (or villain) of the piece, the banking system must acquiesce.

It is obvious, therefore, that one of the ways of attacking the problem of fluctuations is through banking policy. There is no reason, it is argued, to suppose that the volume of money is inherently unstable. It is unstable because the banks have allowed it to be so, and because they are swayed by the ordinary motives of private business rather than by the dictates of intelligent public policy. It would seem possible, in the light of our analysis of cycle theory, for banking policy, if properly directed, to smooth out the

[1] On the broad issues of this and the next two chapters see Keynes' *Treatise on Money,* Book VII, where will be found a learned and often amusing discussion of the problem of the management of money. The student will find an excellent and critical discussion in A. C. Pigou, *Industrial Fluctuations,* Book II, Chapters 4–8. See also A. D. Gayer, *Monetary Policy and Economic Stabilization,* 2nd Edition (New York: The Macmillan Company, 1937). For bank policy in the United States see E. A. Goldenweiser, *Instruments of Federal Reserve Policy,* in *Banking Studies* (Washington, D. C.: Board of Governors of the Federal Reserve System, 1941); and "Federal Reserve Objectives and Policies," *American Economic Review,* June 1947; and for extended discussion of Federal Reserve policy, see W. Randolph Burgess, *The Reserve Banks and the Money Market,* 3rd Edition (New York: Harper & Brothers, 1936).

variations of business, put brakes against undue expansion and barriers against undue contractions, and so bring greater stability into the operations of the industrial system. It is the purpose of this chapter to examine what devices can be used to this end, and how effective they are likely to be in practice.

Banking policy

The fundamental problem of bank policy in its relation to cycles is to control the volume of credit in such a way as to make for industrial stability. This control might and probably does involve some attempt to control the price level; but bank policy as such may not be primarily designed in terms of prices. Fundamentally, it will be directed to the maintenance of stability of industrial activity or, perhaps more exactly, to adjust activity to the normal trend. In any case, it is predicated upon the ability of the banking authorities to control the aggregate volume of bank credit. As we shall see in the ensuing discussion, this control is not easy to get and may demand quite radical measures if it is to be attained.

The problem of control

If the only source of credit in the country were a single institution, such as the government or a single central bank, then the control of credit would be relatively easy and simple, for a single authority could increase and decrease the volume of available credit by administrative order. As we shall see, even this task is not so easy as it looks (since it takes two to make credit effective, the issuer and the user, and the user cannot be compelled to take credit even though the issuer is ready to issue); still there is no doubt the problem of control is greatly simplified when there is only one issuer and one decision, and greatly complicated when the issuers are many, as in the banking system of the United States. This situation is one of the arguments for causing the volume of credit to be a function of the Treasury, or for creating a single national bank, or for nationalizing all the banks. Under any of these arrangements, one decision, and one only, is involved.

Many banks make control difficult. Where these conditions do not exist, however, the problem is more difficult to solve. Thus, in the United States, the aggregate volume of credit is determined by the practices of many thousands of banks, each one making its

own decisions; and the problem, therefore, is to bring about stability in the aggregate volume of credit when issued under these conditions. Clearly, this task is not easy. If bank policy were subject to the law of averages, so that if some banks deviated in one direction from the normal, other banks would tend to deviate in the opposite direction, stability could still be attained: but the experience in booms and depressions is just the opposite—namely, a general tendency on the part of all banks to expand and contract in concert—and for very good reasons. If, when business is expanding, less optimistic banks put brakes on the expansion of credit, they begin to lose business to their competitors and soon find themselves with increasing stores of unprofitable cash; for, as other banks expand and checks are drawn upon their increasing deposits, some of these are deposited in the restricting banks and entitle them to cash from other banks via the clearinghouse. It is very difficult for banks with increasing cash in a time of expansion to resist the general tendency to expand (not to mention the needs of their stockholders). Under these circumstances, it is much more likely that even cautious banks will join the procession of expansion (arguing that they simply keep in step) than that any will be bold enough to act for stabilization, or powerful enough to have much effect even if they do. In short, as is so commonly the case in our competitive system, no one finds it possible or profitable to do what all in the long run would gain from doing; and all follow procedures that result in general damage. Similar influences force contraction upon banks in a period of depression.

A central banking system facilitates control. A central banking system, however, such as is found in most industrialized countries, makes the problem of control less difficult. A central bank like the Bank of England, or a system of central banks like the Federal Reserve System in the United States, can bring appropriate influences to bear upon all banks, so as to enable or encourage them to do in common what no one bank could venture to do alone. Fundamentally, the power of central banks resides in their ability to modify the reserves of their members and, through them, the scale of loans to customers on which the active supply of money in business largely depends. It is important to bear in mind that the central banking authorities have no direct control over the total supply of money, but only such indirect control as is found in the

techniques by which they can influence the activities of the banks in general.

In the United States these techniques include the following:

1. The rate of discount by which the Federal Reserve Banks may vary the cost of borrowing by member banks.
2. Open market operations consisting in purchase and sale of securities by the Federal Reserve Banks.
3. Modifications, within certain limits, of the legal reserve requirements of member banks, permitted by the Banking Act of 1935.
4. Discretionary limitations on the borrowings of individual banks, when they appear to be extending excessive loans for speculation or unsound use.
5. Regulation of margin requirements on loans made for the purpose of purchase or sale of stock market securities, designed to put brakes, at appropriate times, on the volume of speculation.
6. Restrictions on the use of consumer credit, particularly installment credit, set up in 1941 by executive order of President Roosevelt, and continued in part after the war.

The first three of these techniques are essentially quantitative controls designed to regulate by broad and universal action the total volume of available bank credit. The last three are qualitative controls, designed to restrict unsound loans, and are selective and partial rather than general in application.

In the early operation of the Federal Reserve System and even as late as 1923 the Reserve authorities seemed to base their policy on the assumption that the business of the banks was to finance the legitimate needs of trade, and to avoid speculative loans. It was thought that if loans by the Federal Reserve Banks were protected by the eligibility requirements for rediscounting paper, and by the reserve requirements of the Federal Banks themselves, excessive credit expansion could not occur. Or, to put it otherwise, if every individual extension of credit were qualitatively sound, the aggregate of credit could not be quantitatively excessive.[2] On these assumptions, qualitative controls were of prime importance. Of late years, however, it has come to be seen that the aggregate

[2] E. A. Goldenweiser, "Federal Reserve Objectives and Policies," *American Economic Review*, June 1947.

quantity of credit is the more important factor in the control of cyclical fluctuations, and that the "legitimate needs of trade" may be as expansionary as any other use of funds. For this reason it is the quantitative controls to which we must give attention. The rate of discount, the open market operations, and the direct power to control reserve requirements are the important techniques of control. They are the principal weapons in the armory of central banks for stabilizing the activities of business through the management of money.

. *The rate of discount.* The rate of discount is the rate a central bank charges other banks. In the United States it is the rate a Federal Reserve Bank charges its members for discounting approved commercial paper or making advances on appropriate security. As borrowing by a member bank adds to its reserve in the Federal Reserve Bank, it may be said that the rate of discount is the price paid to add to a bank's reserves.

If this rate is raised, then the volume of borrowing by banks tends to be reduced. This outcome reduces the reserves of banks, or more exactly, lowers the rate at which they have been increasing, and hence tends to reduce the amount of additional accommodation that they, in turn, can advance to their customers. It cannot affect the existing volume of loans, but it does tend to restrict further expansion and does make for some unwillingness to renew loans when due, at least for marginal borrowers.

This restrictive influence on the volume of bank loans (and deposits), which is, of course, a restrictive influence on the total volume of monetary purchasing power in the community, may be brought about without a rise in the market rate of interest, by a more cautious loan policy on the part of banks, who now scrutinize borrowers and their security more intensely than before. Or on the contrary (and this action might be regarded as more normal), they may raise the market rate of interest and so bring about the natural restriction of total advances that comes about by the rise in the price of loans. In either case, some advances will presumably be restricted, and progressively so, as the rate of discount presses still harder on the bank's reserve balances in the central banks.

A rise in the market rate of interest, if it occurs, may discourage borrowing in a cumulative fashion, for not only does it make some

current ventures unprofitable which might otherwise have been profitable, but it tends to change the expectations of businessmen and put some brakes on optimistic anticipations. A rise in the rate of interest increases the cost of holding both securities and commodities and puts a premium on present sale. The result is a tendency for both security and commodity prices to fall; and enterprises that have been counting on the continued rise of these prices will postpone otherwise attractive projects. Thus a rise in the rate of discount may set off a whole train of effects that are much larger than would appear to be justified from the original change—so much so that a very moderate change in the rate of discount, if properly timed, may be all that is needed for stabilization purposes. Indeed, it might even be argued that it is a very powerful weapon which has to be used with the utmost discretion and intelligence, if it is not to cause many more reactions than are desirable in the interests of stability.

Similar and opposite effects would be anticipated from lowering discount rates. This reduction tends to increase the borrowing of member banks at the Federal Reserve, increases, therefore, their reserves, makes them more eager to advance funds to customers, and induces them, in order to be able to do so, to make equivalent changes in their own rates of interest. This change makes ventures feasible that otherwise would not be. The rate of borrowing should increase; consequently the aggregate of bank credit outstanding should grow, the more so as (according to influences similar to those described above) it is expected that prices of both commodities and securities would cease to fall and even rise. The accompanying conviction that the trend of bank policy is toward easy money tends to cause businessmen to be more sanguine in their business ventures and reinforces the tendency to obtain an increasing aggregate of bank credit, already set in motion by the change in the interest rate.

Discount rates may not be effective. The theory of changes in discount rates rests on the assumption that the banks in general will be promptly moved thereby to make equivalent changes in their rates to the public. This tendency may be because of the additional cost of borrowing thus thrown upon them; or it may be because of the psychological influence which the change might well

exercise. Banks may be accustomed to look upon changes in discount rates as an important sign of impending business changes. They may regard the action of the central banking authority, based as it is on a more far-reaching acquaintance with all the pertinent facts than ordinary banks can enjoy, as an important warning of impending storm; and they may be led thereby to make changes in their loan policy to which they would not be moved by the mere additional cost of borrowing at the central bank.

This assumption may not necessarily hold true. For example, in the beginning of periods of expansion, the banks may have such large reserves that borrowing at the central bank is unnecessary. In this case, a rise in the rate of discount is nominal and may have no important effects. This outcome was certainly the situation in the United States during the years 1934 to 1937, when, largely due to the great importations of gold, the excess reserves of banks were so large that the quite different device of regulating reserves by administrative order had to be used to bring the situation under control.

A similar situation has arisen since the end of the Second World War. The possession by member banks of large volumes of United States securities, readily turned into reserves to their credit in the reserve banks, has again made the discount rates of the system ineffective, and has caused the Federal Reserve authorities to ask for even further powers to regulate reserves by administrative order. Discussion of these powers will be found in Chapter 19.

Again, even where borrowing is resorted to, market rates may not reflect, or reflect but slowly, changes in the rate of discount. This result may be due in part to the expansive power of bank credit. When several dollars of bank credit can be built up on a single dollar of reserves, increase in the cost of borrowing at reserve banks need not mean a proportional increase in the rate charged to the public. The situation may come about by local habits of banking that tend toward relative stability of local rates. This tendency seems to be indicated in the experience of the various money markets in the United States. Open-market rates on commercial paper, where competition is keen, may reflect changes in discount rates, but rates on customers' loans, especially in the smaller towns and in the South and West in general, appear to be

relatively inflexible and insensitive. They change slowly and fluctuate much less than discount rates.[3] And probably many individual banks stand ready to maintain their charges without increase to desirable customers in the face of increases in reserve banks' discount rates, unless these are substantial.

For these reasons, monetary authorities must be prepared to supplement changes in discount rates by further action if discount policy is to be made effective. This further action resides in the open-market operations of central banks.

Open-market operations as a means of control:-

Open-market operations consist in the purchase and sale in the open market (that is, transactions not merely with banks) of such securities as central banks are allowed to deal in, usually securities issued by the government.

Open-market operations have substantial and immediate effects on the reserve balances of the banking system. If the central bank buys (say) $1,000,000 of securities, paying for them by check, the check is deposited with a commercial bank, adding to some customer's account, and the bank deposits and adds the check to its reserve in the central bank. The commercial bank, consequently, has new credit that it can lend direct to its customers or use to buy securities. As these uses diffuse funds throughout the banking community, they make it possible to increase in multiplied fashion the general volume of credit outstanding; and if the original purchase of securities is widespread, so as to affect the generality of banks, the total credit made available will then become whatever multiple of the reserves rules for the system as a whole. If this multiple is (say) 5, then the purchase of securities to the volume of $1,000,000 by the central banks will add to the available credit volume an amount of $5,000,000.

For similar reasons and by a similar mechanism in reverse, sale of securities to the volume of $1,000,000 would contract total available bank credit by $5,000,000.

These open-market operations may be (and probably are) more effective than mere changes in rates of discount for two reasons. (1) They depend on the volition of the central bank, not on that

[3] W. W. Riefler, *Money Rates and Money Markets in the United States* (New York: Harper & Brothers, 1930), pp. 68–76.

of banks in general.[4] Here they contrast with discounting that arises from the voluntary action of banks, for banks can usually borrow if they desire, and they cannot be compelled to borrow if they do not want to. Open-market operations, on the other hand, are at the discretion of central banks, which can buy and sell securities at their option, as long as there is a security market and any sellers and buyers. (2) In the second place, the effect of open-market dealings on the reserves of banks is direct and immediate. Purchase of securities adds to the reserves of banks; sale of securities reduces their reserves. Thus, whereas changes in the discount rate only make it *advantageous* for banks to change their reserves, open-market operations actually change them. Furthermore, it might be said that, while discount-rate changes may not result in any action whatever by member banks, open-market dealings almost *compel* them to do something.

Making discount rates "effective." The actual and (presumably) unwished-for changes in reserves have a powerful tendency to make discount rates "effective." In expansion, either the banks are compelled to replenish their reserves by borrowing and so come under the influence of a rising discount rate, or they have to reduce the volume of their accommodation to customers, which, of course, is the result the central bank set out to attain. In depression, on the contrary, either the banks utilize the funds from the sale of securities to pay off their indebtedness to the central bank, in which case the ease of their position and their freedom from interest would presumably make them more willing to lower rates to their customers, or they immediately utilize the funds to increase accommodation to their customers, which, again, is the result the central banks set out to attain.

One should note, however, that there is some difference in the immediate effectiveness of open-market operations arising from the working of the two alternatives open to the banks. If, when their reserves are depleted or increased by open-market operations, the banks proceed immediately, without borrowing or debt reduc-

[4] In the Federal Reserve System open-market operations of the reserve banks are of two classes: (1) Involuntary operations, consisting in the readiness to purchase bankers' acceptances and short-term government securities at a stated rate of discount, whenever they are offered by the banks. Here the initiative lies with the commercial banks. (2) Voluntary operations, consisting in the sale and purchase of government securities on the initiative of the reserve banks. It is this latter type which offers a means of controlling the supply of money.

tion at the central bank, to decrease or increase their loans to customers or their investments, then the effects desired are quick, although, even at the best, there is bound to be some time lag as the cumulative influences of open-market operations get into full swing. But if, on the contrary, the normal effect of open-market purchases is to cause member banks to reduce their debt at the central bank, and the normal effect of sales is to cause them to borrow, then there is introduced an intermediate stage between open-market operations and their effects on the volume of bank credit, which substantially increases the time lag involved in the operations, and in some cases may actually counteract the intentions of the central bank.

Under the latter alternative, the central bank cannot directly vary the volume of its investments, for what it loses or gains in securities it gains or loses in advances to the banks. Consequently, open-market operations become simply an adjunct to discount policy (not an alternative or a substitute) and serve merely to reinforce it and make it more effective.

In the past, because the banks in this country were not averse to borrowing at the Federal Banks, the full effects of open-market operations were likely to be delayed. The first effect of purchases was to cause member banks to reduce their debts to the Federal Reserve Banks; the first effect of sales to cause them to borrow. It was only as a *secondary* consequence of these reactions that changes occurred in total bank credit; in expansion, only after the higher discount rates were passed on to the public; in contraction, only after loans were paid off to the Federal Reserve System.

To some observers in the decade of the 1920's, this outcome seemed to prove that open-market operations had essentially no effect at all, save to change the composition of Federal Reserve assets as between advances and investments. The better view is that open-market operations under these conditions are not an independent influence, but an adjunct to discount policy designed to make discount rates "effective." Indeed, Governor Strong of the Federal Reserve Bank of New York argued that open-market operations are largely useful to prepare the way for discount policy, holding that discount changes are apt to be, under American conditions, dramatic and alarming, and that they should be prepared for by previous selling (or buying) of securities.

Making open-market operations more effective. The belief that the open-market operations were of only minor direct effectiveness, but that they could be made more effective, led the Federal Reserve authorities to discourage member banks from the practice of borrowing, save for meeting the temporary and seasonal needs of their customers. Efforts were made to make banks realize that loans merely to enlarge the operations of the bank were not good policy. The rules of eligibility were interpreted to include not mere legal qualifications, but considerations both of the general state of trade and of the reasonable quota for any one bank. As far as possible, loans likely to be used for increasing the volume of loans on securities were definitely discouraged.

Whether or not such measures could create a custom of nonborrowing at Federal Reserve Banks is, of course, open to question. Member banks able to borrow at Federal Reserve Banks in 1929 were not only doing so, but were lending their funds to banks that already had borrowed as much from the Federal Reserve Banks as they could. Indeed, skepticism in regard to these measures was so considerable as to lead to the provisions of the Bank Act of 1933, which allowed Federal Reserve Banks, in granting accommodation to member banks, to be guided by whether such accommodation was likely to be used for excessive carrying of securities, commodities, or real estate, or other purposes not consistent with the maintenance of sound credit conditions. Even this would not prevent widespread expansion due to the "legitimate needs" of trade, which may be just as inflationary as any other use.

However that may be, in so far as the effect of these various regulations and extralegal pressures lead to a nonborrowing attitude by banks, open-market operations would become more directly effective, and the lag of their influence would be reduced.

Even though central bank policy is reasonably effective, in the sense of imposing suitable changes in the lending policy of the generality of banks, the question remains as to how far these changes in their turn are capable of controlling the expansion and contraction of business which, one may suppose, is the ultimate end of policy. As we shall see, even when reinforced by open-market operations, discount policy faces some serious difficulties—to some extent in good times, but even more so in depressions, especially severe depressions.

The effectiveness of discount policy in expansion

1. In a period of expansion, the demand for credit by business may be seriously inelastic. When the spirit of confidence is running high, the demand for bank accommodation is not easily checked by changes in interest rates. If interest is a relatively small fraction of the cost of operation, the inelasticity of demand for credit is increased. For some types of borrowers, merchants for example, interest cost may be relatively burdensome. For industrial production it is not likely to be so high. Doubtless, in due time, a continually rising rate of interest will have its effect, largely by the pressure it exerts on the stock market, and hence on business expectations; but this may come so late in the phase of expansion that the evil is already done, the seeds of trouble are already sown, and the overextension of activity is already impossible to prevent.

2. The very rise in the rate of interest may attract funds into the market and so assist in counteracting its desired effects. In the past this result was likely to happen where a stabilizing policy was used by a country on the international gold standard at a time when other countries were taking no action. The rise of the local rate of interest would prove a powerful attraction for liquid funds which, to the extent they were in gold, would increase the reserves of banks and make them to that degree independent of the action of their central banking authority. Thus the stringent money market conditions of 1928–1929 attracted large sums from abroad, despite the fact that the high rates were in themselves a warning of unsound conditions and had been accompanied by the gravest kind of caution from the Federal Reserve authorities.

3. It is possible also that the restraining influences of open-market policy, intent upon reducing the expansion of bank credit, may, in times of optimism, be offset by changes in the velocity of circulation of money or credit. The velocity of circulation is not directly under the influence of banks. Bank policy may determine how much credit there is to be, but it is the businessman who decides how fast it will be used. It is true that rising rates of interest, designed to check the volume of bank credit, may discourage business expectations and weaken the enthusiasm that makes for increases in velocity; but this cannot always be relied on, especially

in times of speculative furor, and if velocity moves contrary to volume, bank policy will be by so much counteracted.

4. The ability of the central bank to affect market conditions through open-market operations is, of course, strictly limited by its current supply of suitable securities, and in addition by its own preparedness to buy securities at a (probably) high price and incur the loss of selling them at a low one. If the central bank is ready and willing to take losses on security dealings as its contribution to stability and as part of its normal responsibilities as a central bank, it still remains possible that its supply of securities will be inadequate for control—the more so as the securities in which it is permitted to deal may be mostly government securities, so that its control is determined at any moment by the size of the government debt and the current policy of government in regard to surplus and deficit. As Keynes says, "The Reserve banks can only fire off against an incipient boom such ammunition as they have been able to pick up while resisting a slump." That this might in itself be inadequate is shown by the situation of the Federal Reserve Banks during the recovery of 1935–1937, when the excess reserves of member banks reached some 3,300 millions with the total holdings of United States securities in the Federal Reserve Banks of 2,400 millions. Even the disposal of all these holdings would have left the excess reserves at 900 millions. Indeed, the sale of such extensive holdings would undoubtedly have been resisted by the government in the interests of the Treasury, for the result would have depressed government bonds at a time when its sales of new securities would have been hampered thereby. Hence, even the ammunition the banks have cannot always be fired off.

The great increase in the size of the public debt as a result of the war has eliminated the possibility that the Federal Reserve System will be short of ammunition. With a current portfolio of government securities running over twenty billion dollars, the Federal Reserve Banks have far greater powers for the restraint of credit than they have ever had in the past. But the same development that has given them adequate ammunition has increased the possibility that they may not be able to fire it off.

5. Along with the growth of the public debt has come in another problem, and another possible limitation on the power of the

Federal Reserve System to exercise effective control over the volume of credit. The Federal Government is interested in the market values of its securities. It is interested in the cost of government financing. It is interested in preventing losses to the holders of government securities, whether these holders are banks or nonbank investors. And it would be opposed to open-market operations of the Federal Reserve System designed to contract the credit base, if such operations lowered the price level of government securities and raised the interest rate which government would have to offer on new issues.

Essentially what this means is that monetary operations of the Federal Government have come to be of major consequence in the field of money and credit. These operations are similar to, and may have much the same consequences as the open-market operations of the Federal Reserve System. The management of the public debt, with the continual issue, reissue, and redemption of securities, the operation of the social security and other trust funds, even the collection and expenditure of taxes, are powerful influences in the money market. If the interests of the Treasury in these operations happen to coincide with the interests of the Federal Reserve System in the control of the money market, well and good. If they do not coincide, and there is no certainty that they will, the effectiveness of the Federal Reserve System as a stabilizer must be reduced.

That these interests may conflict is obvious. Whereas the principal concern of the Treasury in respect to the public debt is to maintain stability of bond prices and the rate of interest, the concern of the Federal Reserve System in its open-market operations is to change the price of bonds and change the rate of interest. Thus in the postwar period effective control over the expansion of credit by open-market operations was frustrated by the concern of the Treasury in maintaining low rates of interest and stable prices of government bonds. Instead of being free to sell securities in the market, irrespective of effects on their prices, the Federal Reserve Banks, by agreement with the Treasury, had to stand ready to support the price of government securities at prices agreeable to the government. Thus banks that wanted to replenish their reserves, and nonbank investors, such as insurance companies, who wished to sell government bonds to buy other types of issues, could

find a sure market at fixed prices in the Federal Reserve System. Under such conditions control over inflation was greatly impeded.

All this means that two agencies, not one, are operating in the market for government securities, and it will be necessary for their policies to be reasonably coördinated if, despite their diverse interests, control of credit through open-market operations is to be effective.

The problem of timing. 6. Finally, one must note the difficulty of proper timing in the application of bank policy. Brakes must be applied at the right time, and in the right quarters. Applied too soon, they may bring an expansion to an end with factors of production not fully employed. Applied too late, they may find a runaway expansion out of control. Perhaps the latter outcome is the greater danger, for expansions are insidious in their approach. Their seeds are sown some time before the sprouting appears, and it is not easy to know when the sowing occurred. Nor is it easy to persuade the banking and business community to accept restrictions on bank loans when business is good and profits coming in. Bodies sensitive to public opinion, like the Federal Reserve Board, may well delay action until they are quite convinced that action is needed.

Much depends on the guides, statistical or otherwise, by which policy is determined. For many years, for example, the Bank of England was guided by the state of its reserve ratio—that is, the ratio of gold to deposits—raising or lowering its rate of discount as this ratio fell below or rose above some conventional level. But it seems that this index is bound to be defective. Gold movements and central reserve ratios are lagging indexes. They are the effects of expansion and contraction, and not the earliest at that. Hawtrey, it will be recalled,[5] regards the preoccupation of the Bank of England with this ratio as a prime cause of the trade cycle.

Pigou advances evidence to show that changes in the reserve ratio actually tend to precede changes in the wholesale price level, which may be taken to be a good current measure of the state of trade, and that it is only the discount rate (because of natural delay on the bank's part in acting on its changed position) that lags behind the price level. Even with this qualification, it is clear that, if the early seeds of expansion are to be controlled, a more

[5] Chap. 12, p. 224.

sensitive and barometric index should be used. Pigou suggests that, if the signal for action were found in movement of security prices, or of volume of monthly new orders in important industries, or of stocks of finished goods in dealers' hands, or possibly in the percentage of workpeople out of employment, corrective discount changes could be brought into play early enough to have an effective stabilizing influence.[6]

In the 1920's in the United States, the Federal Reserve Board seems to have been dominated by the concept of a stable price level, and to have felt that maintenance of the price level would insure stability in the industrial world. Consequently, the rationale of discount policy throughout the decade was to guard the price level from notable change. That this was a good guide to policy was completely disproved by events, for the decade was one of rapid technological change and falling costs, and a falling rather than a stable price level was called for. Since the policy of the Board was to prevent this very fall and to keep money easy to bring this about, the result was a great inflation of profits and, in the end, one of the most remarkable of American booms. Even as late as 1928, the Board was still resisting corrective measures, and, when at last they were put into force, the crisis and disaster were inevitable.[7]

The effectiveness of discount policy in depression:

Whatever the difficulties in the way of effective discount policy in expansion, they seem to be even more serious in depression, especially severe depressions. Any depression involves tedious and unavoidable readjustments of one sort and another that take time. Serious depressions, in addition, deliver a blow to business confidence that apparently only considerable time can overcome.

Under these circumstances, the demand for accommodation at banks falls rapidly away and is, at the same time, extremely inelastic. Businessmen do not want to borrow even on the most favorable terms, and nothing that the banks can do can force them to borrow. In prosperity, when there is always a fringe of unsatisfied borrowers, bank rate can reduce the total of bank credit,

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[6] A. C. Pigou, *Industrial Fluctuations*, Part II, Chap. 6.

[7] Cf. C. A. Phillips, T. F. McManus, and R. W. Nelson, *Banking and the Business Cycle* (New York: The Macmillan Company, 1937), Chap. VIII.

and the total of effective purchasing power in use. In depression, the banks cannot increase the effective purchasing power in use; they can make it as attractive as they like, but only the public can decide to use it; and the evidence is that they will not. In times of depression, when sales are falling and idle capacity increasing all over the field, business enterprises cannot be coaxed readily to increase or even continue their borrowing. Current output continues to be unprofitable, and any demand for additional equipment or capacity is almost fantastic. Nobody is going to install productive equipment for a remote and uncertain need, not to mention the difficulty of knowing what kind of productive equipment will be needed.

Under these conditions, cuts in interest could hardly be great enough to overcome the anticipated losses which seem to face the business community. Even a negative rate of interest would be unattractive if borrowers anticipated loss on any use to which they could put their money. If the fall in prices is expected to continue, any conceivable reduction in interest rates would be counteracted. Prices falling 10 per cent per annum turn a money rate of −5 per cent a year into a real rate of +5 per cent.

Hence open-market purchases may turn out to be a very blunted weapon of attack. They may free banks from indebtedness to the Federal Reserve System and put them in possession of increasing volumes of cash, but they cannot bring about, merely by easing the money market, an effective increase in the flow of purchasing power in use. The banks will merely add to their excess reserves without thereby stimulating industrial activity, for the only safe investments at such times are the very government securities that the open-market policy of the Federal Reserve System would deprive them of.

Easy money no sure cure for depression. This potential difficulty is vividly illustrated by the experience of open-market operations of the Federal Reserve Banks in 1932 and 1933.

During the year 1932, under the influence of President Hoover, who, although conservatively inclined, favored open-market purchases as the correct method of easing the money market and making greater credit available to business (After all, it was practiced by the Bank of England!), the Federal Reserve Banks bought approximately one billion dollars' worth of securities from the

market. This purchase built up the reserves of member banks to unprecedented heights; but the loans to business did not increase. In point of fact, they steadily declined. What is more, throughout the entire period of purchase, the velocity of circulation of deposits declined also, so that not only did business not use the chance to increase its borrowings from banks, but even what funds it had were used at a slower place than before. As far as the banks were concerned, their only benefit was to get out of debt to the Federal Reserve Banks.

In 1933, under the Roosevelt administration, the Federal Reserve Banks had a similar experience. Although net purchases of over half a billion of securities were made in the open market by the Federal Reserve Banks, member bank loans increased only a few millions. The principal effect was to add to the excess (and idle) reserves and free the banks almost completely from dependence on the Federal Reserve System. Doubtless all this was done in the hope that the excess reserves of banks (which, after all, indicated lack of earning assets) would induce them to adopt more liberal lending and investing policies and so facilitate the recovery of business, but in point of fact this desirable result did not occur.

Of course, it is quite possible that the banks did not go far enough. Mr. Keynes had already argued in his *Treatise* that, when severe slumps come, central banks should overcome their nervous fears of "causing the total volume of money to depart widely from its normal volume" and intensify open-market purchases to "saturation" or to whatever degree is necessary to bring down the long-time rate of interest to levels attractive to business.[8] In 1933, a group of economists of the University of Chicago called upon the Federal Reserve Banks to increase the flow of their funds into the market via purchases of securities, and to continue to do this until the low leyel of interest and the high price of securities would "take," and business would be pushed into expansion. Whether this expansion would have been the result or whether idle reserves would have risen thereby the higher cannot precisely be known, for, by February 1934, further open-market purchases

[8] Keynes, *Treatise on Money*, Volume II, pp. 369–387. By 1936, however, Keynes had become sceptical of the success of a monetary policy directed toward influencing the rate of interest. He feared that fluctuations in the expectations of entrepreneurs would be too great to be offset by practicable changes in the rate of interest. *General Theory of Employment, Interest and Money*, p. 164.

of securities by the Federal Reserve Banks ceased (not to begin again until 1937), and the government settled back for its recovery program on devaluation, the NRA, and public works.

But that it would have continued to be difficult to stimulate expansion merely by easing the money market and making funds available for business is indicated by the extraordinary conditions of bank reserves in the period 1934–1937. During these years, the net gold inflow into the United States was at a rate of over a billion dollars per year. Up to early 1937, when the restrictive policies of the government through changing legal reserves reached their peak, over four billions (net) of gold had come to this country. This gold being transferred to the Treasury in exchange for checks on Federal Reserve Banks, as required by law, resulted in enlarging the reserves of member banks, and on easy money theories should have caused a proportionate (multiple) expansion of loans to business. This expansion did not occur. Perhaps a billion of the gold served to back the increased liabilities of banks; but over three billions more were added to the reserves back of existing liabilities, raising excess reserves to unprecedented heights. This outcome shows that mere increase in reserves does not necessarily lead to proportionate expansion of bank credit in use.

The great difficulty, therefore, with easing the money market to the point of saturation seems to lie in the problem of forcing funds into circulation and possibly the danger, always imminent, that the increasing volume of potential credit thus piled up may eventually burst out in a sudden rush of inflation. These funds are a great pool of dammed-up purchasing power, held back partly by the reluctance of banks to lend, partly by the timidity of borrowers in periods of depression; but if the dam gives way, perhaps with a sudden return of confidence, or perhaps because fears of inflation start a runaway spending before high prices arrive, then a rush of inflation may set in which is not to be controlled easily. Therefore, efforts to end depression may make it less easy to keep the next recovery within reasonable bounds.

Conclusion

Looking back, now, over the discussion of credit control in booms and depressions, the general conclusion must be that manipulation of discount rates and open-market dealings by central

banks should be reasonably effective, if applied quickly and continuously, in preventing booms from developing and, consequently, depressions from arising. But it is apparent that the ability to seize the right moment may be lacking or made ineffective by various neutralizing effects, and that, if powerful forces are at work, an extravagant expansion, despite all efforts at credit control, may develop. When this result happens, the possibility of averting a depression by credit operations is very slight, and it is highly probable that, once depression has set in, the best that can be done is to have the central banks keep the money market easy and liquid, and then fall back on other methods, such as expansion of public works, to make the spark for recovery.

These limitations on the effectiveness of their traditional policies have led banking authorities in the United States to seek more powerful means of control. The most important of these, the direct regulation of reserve ratios, is discussed in the next chapter.

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MONETARY MANAGEMENT: PROBLEMS OF THE MONEY SUPPLY

(3) Direct Control over Reserve Ratios :–

CENTRAL BANK POLICY, as described in the previous chapter, influences the volume of credit in two ways. The rate of discount affects the cost of credit, and through this the demand for credit. The open-market operations affect the supply of credit through changes in the reserve accounts of banks.

There is a third instrument of policy—control over reserve requirements. This instrument affects the supply of credit by changing the volume of reserves that must be held against deposits. Potentially it is the most effective instrument of all. Changes in discount rates make it more or less desirable to borrow funds for reserve requirements, but cannot ensure that any action will be taken. Open-market operations of the voluntary type are restricted in scope by being limited to dealings in government securities. But changing legal reserve requirements operate directly and over the whole field. A reserve of one million dollars would support 10 millions of dollars credit on a 10 per cent reserve ratio, 12½ millions credit on an 8 per cent reserve ratio, and 8 millions credit on a 12½ per cent reserve ratio. Thus a mere change in reserve ratios permits wide variations of credit, and control over reserve ratios can be made a powerful instrument of monetary management.

In the United States, as is well known, bank reserves have been regulated by law for many years; but the regulation has been in the interests of solvency and the protection of the depositor, rather

than for stabilization of economic activity. Minimum reserves, not actual reserves, have been controlled. Such differentiation as has been prescribed has been between city and country banks on the one hand, and between time and demand deposits on the other, and has had no relation whatever to the problem of monetary stabilization.

The need for monetary stabilization became insistent in the years following the devaluation of the dollar in 1934. The rapid increase in gold imports greatly increased the funds of banks, raising their reserve balances well above the requirements of the law. These excess reserves freed the member banks, at least temporarily, from dependence on reserve credit, and caused the Federal Reserve Banks to lose touch with the money market and with this their power to control credit conditions. As the forces of inflation inherent in the situation might break loose at any time, the Federal Reserve authorities moved to gain some flexible control over reserve requirements.

Control of reserve ratios by the Banking Act of 1935

It was first proposed that the reserve basis be determined for all banks according to (a) the total volume of deposits and (b) the activity of these deposits as measured by an index of velocity of turnover. That is, the required reserve ratio would not be constant but would rise as the volume of deposits rose and/or the activity of deposits increased, and fall under the opposite conditions. Thus, as business expanded and contracted, the expansive power of credit would be automatically decreased and increased.

This kind of regulation was projected for the Banking Act of 1935. What actually was enacted was somewhat different. The projected provisions would have established a sliding scale of ratios by legal enactment; the actual provisions rejected this procedure and substituted control through the discretionary power of the Board of Governors of the Federal Reserve System. "In order to prevent injurious credit expansion or contraction," the Board of Governors may change the legal reserves of member banks against either time or demand deposits; but these changes may not require reserves lower than those previously required, nor more than twice as high. This provision gives discretionary power to fix reserves over the following range of reserve percentages:

Demand Deposits	*Minimum*	*Maximum*
Central Reserve City Banks	13	26
Reserve City Banks	10	20
Country Banks	7	14
Time Deposits		
All Banks	3	6

These powers were used in the summer of 1936 and the spring of 1937, when by successive increases the reserve ratios were raised to the limit permitted by the law; i.e., were doubled. The great volume of excess reserves in the possession of member banks, which reached a maximum of $3,300 million in December 1935, a rapid expansion of economic activity, a considerable rise in the prices of raw materials and in the prices of securities. made for fear of inflation and were taken to justify action on the part of the Federal Reserve authorities.

It was explained by the Board of Governors that the purpose of these changes was not to reverse the policy of monetary ease followed since the beginning of the depression, but rather to restore the powers of control over the money market, which had been seriously impaired by the rapidly rising excess reserves of banks. By this action, the Reserve System would be in a position through open-market and discount-rate policy to ease or tighten conditions of credit.[1]

As events turned out, the restored control over the market had to be used promptly but in a somewhat unexpected direction. For the result of the increase of reserve requirements was a considerable sale of United States Government securities by banks unable, without some liquidation of assets, to meet the higher reserve requirements. To prevent a fall in the price of these securities, which would have been displeasing to the Treasury, with its policy of low interest rates, the Federal Banks bought about $100 millions of bonds, adding to their holdings for the first time since February 1934.

These diverse changes preceded and may have been partly responsible for the rapid recession of business that took place in

[1] *Federal Reserve Bulletin,* February 1937, pp. 95–97.

1937. Although apparently designed as a means of putting the Reserve authorities in closer touch with the money market, they were interpreted in business circles as a definitely restraining action and may have had unduly discouraging and deflationary influences.

However that may be, when depression came along the Board moved to ease the situation once more, by reducing the reserve requirements by about one-eighth, or some 750 million dollars. Between April 1938 and October 1941 the required reserve percentages against demand deposits for the three groups of member banks were 22¾, 17½, and 12 per cent, respectively, and for time deposits, 5 per cent.

The excess reserves of member banks continued to rise during this period and by early 1941 amounted to nearly seven billion dollars. As part of the Government's program to combat inflation and to establish better contact between the Federal Reserve Banks and the money market the Board, effective November 1, 1941, once again raised reserves to the limits allowed by law. During the next year, reserve requirements were eased somewhat for banks in New York and Chicago (central reserve city banks) all others remaining at double the original rates. From October 1942 to February 1948, required reserve percentages were as follows:

Central Reserve City Banks	20%
Reserve City Banks	20%
Country Banks	14%
Time Deposits	6%

During the war period, therefore, legal reserve ratios were held constant, and no further attempt was made to utilize them for purposes of control. Indeed, throughout the war, all considerations were subordinated to the needs of supporting government finance. Federal Réserve policy was directed to providing banks with enough reserves to purchase government securities not taken up by other investors, and to maintain stable bond prices and yields. The system purchased securities whenever it was necessary to support the market.[2]

It will be seen that the preoccupation of the Board in respect

[2] E. A. Goldenweiser, Federal Reserve Objectives and Policies, *American Economic Review*, June 1947.

to their power to regulate reserve requirements has been rather to prevent inflation than to combat deflation. The monetary situation since the beginning of the war has reinforced this attitude. In December 1940, impressed with the dangers of impending inflation, the Board of Governors, the Presidents of the Federal Reserve Banks, and the Federal Advisory Council joined in recommending to Congress that minimum reserve ratios be raised to double their original levels; that is, to 26, 20, and 14 per cent, respectively; and that the Board be empowered at discretion to make further increase in reserves up to not more than double these new minimum requirements. This would have enabled the Board to raise ratios to as high as 52 per cent for Central Reserve City Banks, 40 per cent for Reserve City Banks and 28 per cent for country banks.[3]

Postwar Inflationary Problems

The expanding financial demands of the war program caused this request to be shelved. But inflationary forces kept on rising. The extraordinary increase in fiscal deficits during the war, financed by loans from banks and sales of bonds, created severe inflationary possibilities which, kept in check during the war, threatened to burst out in the postwar period, as soon as price controls and other restrictions were removed. The motive power behind this inflationary danger lay in the great increase in the liquid assets of the public at the end of the war. Personal and business holdings of liquid assets in the form of currency, bank deposits (both demand and time), and United States government securities, which stood at 70 billions at the end of 1940, reached 226 billions at the end of 1945. The possibility that these large liquid assets, together with the current income from production, might be turned into the market for goods at a time when the supply of goods available for purchase was far from adequate to meet demand, made a grave threat of inflation, and created a situation calling for the exercise of the reserve system's powers for restricting credit.

Unfortunately the actual conditions of the postwar economy subjected these powers to severe limitations. The end of 1945 saw the commercial banks with some 78 billions of government

[3] See *Federal Reserve Bulletin,* January 1941.

securities in their possession. Of these, perhaps 25 billions were low-interest short-time certificates. At any time these latter could readily be turned into cash by sale to the Federal Reserve banks, which by understanding with the Treasury, stood ready to buy whenever necessary to prevent a fall in price (i.e., a rise in interest). There was the greater temptation on the part of commercial banks to do this because of the higher rate of interest on alternative investments. To the degree that they sold securities to the Federal Reserve banks, and raised their reserve accounts accordingly, they created a multiple potential credit expansion in the ratio of 6 to 1. Under these circumstances the Federal Reserve Banks were in a curiously ineffective position to control credit expansion. The government was averse to any rise in interest rates, and banks were in a position to maintain or increase their reserves at will.

To meet this situation the Federal Reserve Board suggested to Congress the following measures:

1. Allow the Board of Governors to prescribe a maximum of long-term marketable securities (whether public or private issues) that any bank could hold as a security against net demand deposits. It was hoped thereby to discourage banks from cashing in short-time certificates at low rates to invest in long-time securities at higher rates.

2. Allow the Board to require commercial banks to hold a specified percentage of Treasury bills and certificates as secondary reserve against net demand deposits (or to hold vault cash or excess reserves in lieu thereof), and thus to freeze their holdings of short-time securities and prevent turning them into cash at the Federal Reserve Banks.

3. Allow the Board to raise reserve requirements against net demand deposits above the maximum levels permitted by the Act of 1935, together with greater administrative flexibility in applying changes, and with the provision that banks be allowed to count vault cash as reserve. It was further recommended that all commercial banks be subject to the same reserve requirements. These controls would strengthen the power to prevent credit expansion on the basis of gold imports or flow of currency from circulation into the banks.

It was hoped that, through these devices, a compromise could be

made between the needs of the Government to maintain low interest rates on the public debt, and the need of the Reserve Banks to prevent excessive expansion of credit.[4]

These proposals were not accepted by Congress, the more unfortunately as the inflation that had been threatening broke loose with the dropping of price controls in 1946. Bank loans continued to rise, and bank reserves were increased by the net import of some 3.5 billion dollars in gold. Faced with the continual threat of expanding bank reserves and multiple expansion of credit, the Federal Reserve Board of Governors made further efforts to decrease the expansionary facilities of the banks late in 1947. It was recommended to Congress that a "special reserve," in addition to regular reserves, be required of banks, this reserve to consist of government securities or cash (to the extent that cash was in excess of 20 per cent of demand deposits plus 6 per cent of time deposits), and not to exceed 25 per cent of demand deposits and 10 per cent of time deposits. This proposal was not accepted. It was then recommended that reserve requirements be raised by ten percentage points for demand deposits and six percentage points for time deposits. This too was not accepted, but eventually Congress in its short session of August 1948 consented to a temporary addition of four percentage points and one and one-half percentage points to the maximum reserve requirements against demand and time deposits, respectively. Under these modest powers, the Board raised the current requirements against demand deposits by two percentage points and the reserves against time deposits by the full one and one-half percentage points.

It can hardly be said that this legislation did much to check the dangerous possibilities residing in the bond holdings of the commercial banks.

The Treasury, despite some willingness to raise interest rates on current securities, still found marked support of its securities by the Federal Reserve Banks essential. And the danger remained that any attempt by the Federal Reserve authorities, by open-market operations, to contract the high volume of credit, would be as impotent as it had been since the end of the war.

It is clear from this recital that the influence of the Treasury,

[4] See 32nd Annual Report of the Board of Governors of the Federal Reserve System, 1945, pp. 1–8.

and particularly the problems created by the great size of the public debt that is a legacy of the war, have come to overshadow to a considerable degree the stabilizing operations of the Federal Reserve System. How much this will affect adversely these stabilizing powers remains to be seen. What it means is that fiscal policy, debt management, and credit management must be coordinated to avoid conflict and to produce the best stabilizing effects. As has been pointed out above, the operations of the Treasury in respect to its securities are similar to, and have the same effects as the open-market operations of the Federal Reserve Banks. The Treasury's payment of maturing bonds, issue of new bonds, and exchange of new bonds for old are a constant influence in the market. If the Treasury is not to cancel out the operation of the Federal Reserve Banks, coördination is essential.

100 per cent money

The proposal to control more directly the total supply of money by fixing the reserve ratios of banks raises the questions: Why would it not be more efficacious to remove completely the elasticity of bank credit by fixing reserve ratios at 100 per cent? What is the advantage of juggling with reserve ratios in the probably vain attempt to stabilize bank credit, when the simple act of raising ratios to 100 per cent would once and for all limit changes of bank credit to changes in the volume of reserves? If the deposit currency of banks were an inflexible function of reserves, then any operations successfully controlling the reserves, would, *ipso facto,* control the volume of bank credit. As long as currency is *not* an inflexible function of reserves, banks can defeat control by changing the ratio of reserves to bank credit, and the aggregate of bank money still escapes effective regulation by the central banking authorities.

For this reason, various reformers have advocated 100 per cent reserves as a cornerstone of money management and a prerequisite to stability.[5] Let us now examine how this arrangement would

[5] The arguments for 100 per cent reserves and various proposals for bringing them about will be found set forth in the following places: (a) Irving Fisher, *100% Money* (New York: Adelphi, 1935); (b) J. Lauchlin Currie, *Supply and Control of Money in the United States* (Cambridge: Harvard University Press, 1934); (c) H. C. Simons, *A Positive Program for Laissez-faire* (The Chicago Plan) (Chicago: Chicago University Press, 1934). See also P. H. Douglas, *Controlling Depressions,* pp. 184–188.

work, using as an example the proposals advanced by Professor Irving Fisher, one of the leading advocates of such a plan.

The Fisher plan for 100 per cent reserves. Fisher proposed that the Federal Government, through some appropriate agency (say, a Currency Commission), buy sufficient assets of the commercial banks of the country to make their cash reserves against checking accounts 100 per cent. The assets would preferably be United States bonds so as to reduce the national debt, and the means of payment would be national currency issued by the government. He would also have the Commission buy enough assets of the Federal Reserve Banks to redeem all their outstanding liabilities in currency. This procedure would turn all the existing assets of the Federal Reserve Banks and a large fraction of the assets of other banks into cash; but as the cash would be needed for reserves, nothing thereby would be added to or subtracted from the existing total of the circulating medium.

For the banks, this cash, like other reserves, would be a credit on the books of the Commission, as present reserves are a credit on the books of Federal Reserve Banks, translatable in emergency into bank notes or similar appropriate "currency," but ordinarily transferred from bank to bank by simple entries on the books of the Commission.

With existing deposits thus secured 100 per cent, further demand deposits would then require 100 per cent reserve. Deposits would become what they were originally expected to be—namely, deposits in the literal sense. In respect to deposits, banks would be storage warehouses for the spare funds of the community. Thus for an individual bank as well as for the aggregate of banks, deposits could rise only if cash rose, and in exact ratio thereto. As this situation would reduce the earnings of banks, no longer able to charge interest for loans of bank credit, customers would doubtless have to pay some fee to banks for the privilege of deposits therein.

Savings deposits would be a different case. Savings would essentially be for investment, not storage, and the banks would be not warehouses, but rather brokers for investments. They would be middlemen bringing savers and investment opportunities together. As such, they would not keep on hand any more cash than they do at present—namely, just enough to meet the demands of

customers who do not want to wait until their investments are cashed in by sale or maturity.

Loans under the 100 per cent plan. Moreover, banks could still make loans. They could loan their own money (capital and surplus). They could reloan the proceeds of loans paid back by customers. They could loan the sums placed in their hands for investment purposes by savings account customers. They could lend any new money advanced to them by the Currency Commission when it was necessary to do so in order to keep the total volume of currency in proportion with the growing needs of industry and trade.

But they could not under any circumstances lend the money placed with them in demand deposits; nor, *a fortiori,* could they use this money, as they have done in the past, as a basis for multiple expansion of bank credit.

There is nothing in this arrangement, Professor Fisher argued, that will reduce the volume of available loans at banks. On the contrary, it ought eventually to increase them, yet with perfect safety. The existing loans will not be decreased because the required additional reserve will be had by selling or rediscounting, or borrowing on, the necessary amount of assets. When these assets fall due, the funds paid by the borrowers will revert to the Central Currency Commission, which is then in a position to supply with funds any bank that wishes to make a loan of similar amount. Or if the assets had still been held by the original banks, they now have funds that make their reserves over 100 per cent and put them, with those excess reserves, in a position to lend up to the original volume of loans. New loans will therefore come, whenever (and not until) investors are ready, through savings accounts, to save the necessary amounts. But as the whole business structure ought to be safer without the unstable money of the partial reserve system, savings ought to be made with more confidence, and Professor Fisher thought they would increase in the aggregate with advantage to the growth of wealth.

Naturally, variations of this procedure would suggest themselves to ingenious minds. Thus the Currency or Monetary Commission, instead of buying up the bonds of the banking system, might lend the banks enough cash to raise their reserves to 100 per cent. Or the banks might be allowed to count government bonds as re-

serve, with the right to cash them at will into currency issued by the Commission. Again, as has been suggested in the so-called Chicago Plan, long-time loans might be made largely by separate institutions of the nature of investment trusts, whose securities the public would buy instead of depositing their "savings" in savings banks.

Creation of money not a proper function of banks. These are only details. The essence of all such plans is to separate the function of creating money from that of retailing credit. The banks can continue to be the middlemen between lenders and borrowers, but the producers and controllers of the aggregate volume of monetary purchasing power of the community they can no longer be.

There are some who would accomplish this objective by nationalizing the banks. The 100 per cent reserve does not go this far. The banks continue to be, as they have been before, private institutions. But it does effectively nationalize the function of currency creation. It is arguable that this is precisely what should be done, and what was expected to be done by the terms of the Federal Constitution. Article I, Section 8, of the Constitution specifically bestows upon Congress the issue and regulation of money. It is only by a historical accident that money has become so little gold, silver, and paper currency and so much the check-book currency characteristic of our times. One may say that banks, unconsciously, without purpose, and without even knowing themselves what has been going on, have usurped an essential function of government. The underlying purposes of Federal Reserve policy and open-market operations have fundamentally been to get that function back. The advocates of 100 per cent reserves simply hold that this gets it back finally and without any uncertainty or ambiguity.

100 per cent reserves no panacea. Nobody claims, of course, that the 100 per cent reserve plan is a panacea. It does give to the government an apparently complete control over the volume of money, whether currency or bank credit. The volume of money as it stands at any moment would be a fixed and determinable quantity; and thereafter all changes will depend on the deliberate action of the currency authority, which presumably will so act as to keep this volume at levels that will make for stable and con-

tinuous growth of economic activity. Whether this action will abolish cyclical fluctuations and, particularly, whether it will prevent depressions are other matters.

A monetary authority can create money, but it cannot, as such, cause it to be used. The volume of money in use depends not merely on the volume supplied by the monetary authority; it is also a function of the velocity of circulation, and this is dependent on the will of people to use their funds. No authority can determine the intensity with which purchasing power is used. If people want to withhold funds from use, and put them in savings accounts and leave them there, they can. If the banks receiving these accounts do not lend them to borrowers either because of their lack of confidence in business ventures or because business is not in the mood to borrow, they cannot very well be compelled to do otherwise.

To meet this situation, therefore, the currency authority under 100 per cent reserves may be compelled themselves to put funds in circulation—say, by the purchase of appropriate securities from the community in general. If this does not overcome the tendency to keep funds idle (and the experience of similar activity in the great depression indicates that this danger may materialize), the government may have to go into action itself and get the funds into circulation by a system of public works or other government spending.

If booms and depressions were largely the result of credit expansion and contraction, this situation need not arise, for booms could be prevented by monetary control. Without booms to create tension, depressions would have no reason to occur, nor would hoarding or other forms of velocity reduction seem likely to take place. But enough has been learned in our survey of cycle theory to indicate how easy it may be for a rate of expansion to be begun that cannot be maintained, and how difficult it is to avoid the deflationary consequences when activity begins to slacken.

Wars, investment booms stimulated by invention, and acceleration of capital goods production begun by changes in consumers' demand may still bring about bursts of expansion, even with all our efforts to control the money supply. It will not be easy to prevent a community determined upon expansion from carrying it through. Indeed, the banks may often have been merely pas-

sive instruments of expansion and contraction imposed by industrial leaders upon the economic world. It may turn out to be that even governments may not be able to resist the demand for expansion in times of great speculative or inventive or warlike urges; and the monetary authorities may be compelled to issue the volume of currency needed to satisfy the "boom" in industry.

The subsidence of activity that inevitably must follow such episodes will not readily be prevented by merely monetary measures. The lesson of the great depression may not be very clear, but it is clear on this point at least: that the volume of money available is quite different from the volume of money in active use; and that to prevent activity from falling below its normal levels, government spending and lending may have to be brought into play.

Will 100 per cent reserve reduce the cost of our money supply? It is argued in favor of the 100 per cent reserve that the profit from creating the supply of money that has been the perquisite of banks would be enjoyed by the public as a whole. The issue of money could be carried on at cost, only such charges being levied as are necessary to pay the unavoidable expenses of currency issue and management. Furthermore, the procedure by which, to get the 100 per cent reserve plan in operation, currency is issued in exchange for the banks' holdings of government bonds, would be on such a scale as almost to wipe out the government debt. Thus, by the exchange of noninterest-bearing currency for the bond issues of the government, the public saves the interest on the national debt.

This seductive argument may not be so good as it looks. If the creation of the money supply of banks is under competition, the charge for the service will approximate the cost. Only if (a) there had been a monopoly profit, or if (b) the government could perform the service at less cost, all things considered, would there be a real saving to the public by transferring the job to the government. Whether the latter condition would prevail only experience could tell. But it is easy to overestimate the saving. Under the fractional reserve system, checking accounts are frequently carried by the banks at their own expense, the procedure of drawing, paying, clearing, transfer, and exchange being carried on gratis. With 100 per cent reserves, this favor could not be done. If the cost were reimbursed by the government from taxes, as some

suggest, it would be an obvious burden on the public. It is a cost on the general depositor when charged up to him, as would probably be the case, by the banks. This charge is one deduction from the apparent gains to the public from the 100 per cent plan.

Furthermore, there is the problem of choosing and taking care of the assets against which the monetary commission would issue notes. This job is not costless. The cost of managing the money system, the investigations, the current flow of statistical information; the cost of resisting political pressure; and the cost of "public relations" and propaganda are bound to add up to a considerable sum.

It has been pointed out by Angell [6] that the aggregate interest paid on government bonds to banks in the year 1935 was scarcely enough to pay the apparent service costs of the aggregate checking accounts. If this situation continued, and if, in addition, the cost of managing the money were taken into account, it does not appear that the public would gain much, net, by wiping out the public debt in exchange for the "right" (should it be called the "burden"?) of issuing money.

Administrative problems of changing to 100 per cent reserves. Perhaps one should add that the problem of reaching 100 per cent reserves is an administrative one of no mean order and one that may possibly not be solved without considerable economic disturbances. One might recall that the doubling of the reserve requirements in 1936–1937 was not accomplished without some agitation in banking circles, and not without a considerable fluctuation in the bond market. Indeed, the need on the part of the banks, especially the country banks, to acquire cash put some strain on the price of bonds, had something to do with the serious fall in government bonds in early 1937, compelled the government to reverse its policy of anti-inflation, and caused the Federal Reserve Banks to buy considerable quantities of bonds for the first time since February 1934; and may have had consequences not unconnected with the stock market (and, therefore, with the business) recession that was precipitated in the second half of the year.

To change to 100 per cent reserves would be a much more

[6] J. W. Angell, "The 100% Reserve Plan," *Quarterly Journal of Economics*, November 1935.

formidable maneuver. The great increase in the government debt during the war, and the volume now held by the commercial banks, would of course ease the problem. Assuming that perhaps one-half the total earning assets of the banks would have to be taken over by the appropriate government agency or otherwise turned into reserves, even this large figure could be met from the banks' current holding of government securities.

But there seems no indication that any such project will be undertaken at the present time, partly because of its radical nature, partly because other methods of control, not only the regulation of reserve ratios, but particularly the possibility of setting a special reserve, as has been advocated by the Federal Reserve Board, offer reasonable prospects of doing what 100 per cent reserves would do in theory. In any case, we seem to be moving toward permanently higher ratios, and reduced potentiality of multiple expansions of credit on any given reserve. Indeed it has been suggested that in inflationary times the reserve authorities be given the power of requiring 100 per cent reserve against *additional* deposits above a certain amount. This would effectively bar multiple expansion on the basis of incoming gold, or return of currency from circulation to the banks. To that extent the advocates of "100 per cent money" would have won a victory.

So much for the 100 per cent reserve plan. There seems no doubt that it would reduce the hazards of deposits. It would probably increase the effectiveness of monetary control, although it might be argued that reasonable coöperation of the banks with the policies of the Federal Reserve System would be as effective in the long run. Whatever its effectiveness, it would leave some factors uncontrolled, particularly the velocity of circulation and the possibility of using forms of credit, such as book credit, not easily subject to banking restrictions. In any case, it would not be costless; it might not even be sufficiently less costly than the present arrangement to justify the hazards of its introduction.

The proper volume of money:-

If the purpose of monetary management is achieved—that is to say, control over the volume of money—the first question that will have to be faced is: What is the proper volume of money?

What, in other words, is to be the proper standard to which the volume of money should be made to conform?

The standards that have been suggested most commonly are the following:

1. A constant volume of money.
2. A constant volume of money per capita.
3. A varying volume of money such as to maintain stability of some one of the possible price levels, wholesale prices, cost of living, general prices, and so on. This standard might be called "the constant purchasing-power standard."

All of these standards must start from some essentially arbitrary level. If the volume of money is to be kept constant, the start must be the volume of some given date or year. If the price level is to be stabilized, the start must be the price level of some given date or year. If it were possible to name any date or year that could be reasonably regarded as "normal," that date or year might be chosen. Thus the Roosevelt Administration in its early years was thinking in terms of stable prices on the level of the year 1926, which was regarded as normal. Not quite so sensibly, the Agricultural Adjustment Administration was instructed to attempt to bring up agricultural prices to the relative level of the years 1910–1914, which were, apparently, also regarded as normal.

But no price level and no volume of money are normal. Furthermore any price level that is chosen, either directly or indirectly by choosing the volume of money, will be fairer to some than to others. The price level of 1932, for example, would be more advantageous to creditors than that of 1939. If the price level of 1926 were chosen as the normal, all creditors whose money was put out at interest in any year since 1929, including all creditors of the Government itself in the years since 1933, would be penalized. If the levels of the year 1939 were chosen, all debtors whose debts had been contracted at a higher level would be penalized.

To repeat, therefore, any standard must start from some more or less arbitrary level. Granting that such a level is chosen, what are the relative merits of these three standards?

1. *A constant volume of money.* The argument for a constant volume of money is that changes in the price level will no longer be propagated from the monetary side. Such changes as occur

will be from nonmonetary causes. Thus, as the total volume of output in the typical industrial country is normally on the increase, the price level, with a constant volume of money, must fall. This result is as it should be, for the causes of the increase of output and the subsequent fall in prices are nonmonetary in nature. They are improvements in technology, growth of population, opening up of new resources, and so on. Monetary causes have been removed by holding the monetary supply constant. Money, in short, is "neutral."

That money should be "neutral" is the position of Hayek and a natural corollary of his theory of the cycle. The rhythmic expansion and contraction of the volume of bank credit, with its consequences in encouraging uneconomic changes in the structure of production that are impossible to maintain, are removed by fixing the supply of money; and no other causes are capable of generating cycles.

This standard, however, may need to be qualified in some particulars. A neutral money professes to remove monetary causes of fluctuation; but a constant money supply does not necessarily do this. There are two influences of a monetary nature that may even then affect price levels and may have to be removed for the sake of stability. These are: (1) changes in the velocity of circulation, which are as capable of initiating price changes as changes in volume of money; and (2) changes in the proportion of the total flow of goods effected by money (what Hayek calls "the coefficient of money transactions"), which clearly determines the demand for money, hence its value and the level of prices. Thus the merger of firms formerly independent releases money and is equivalent to an increase in money supply; just as, in the contrary case, a subdivision absorbs money and is equivalent to a decrease in money supply. For this reason, Hayek concedes that the volume of money should not be constant, but should change so as to cancel changes in velocity and changes in the coefficient of transactions, varying inversely with the former, directly with the latter. With this modification, the money supply would be truly "neutral."

It is possible that these modifications have no great importance. Snyder has shown that, over long periods, velocity of circulation has no noticeable trend; and it may well be, although there is no

definite evidence of this, that the various changes in business relations that might affect the "coefficient of money transactions" are so numerous and so various as to cancel out fairly well. For short periods, it is highly improbable that the coefficient of money transactions would change much; but this cannot be said for velocity of circulation, which has had definitely marked cyclical fluctuations, rising in boom, falling in depression. For this reason, a "neutral" money (if there is such a thing) must take account of velocity changes.

A constant volume of money suffers from one grave defect, which needs some examination. As noted above, a constant volume of money in the face of the gradual increase in aggregate output, which is the normal behavior of modern industry, must result in a falling price level. Now, where the increase of output is the result of technological advance, or of new discoveries, it is arguable that the falling price level will cause no trouble, for costs will be falling and aggregate profits may be maintained. Hence there will be no motive to decrease aggregate employment or to diminish the money earnings of the factors of production. Where the increase of output is the result of an increase of population, technical methods unchanged, then, unless production as a whole (agriculture and extractive industries included) were in a position of increasing returns, the fall in prices raises serious problems. There is no fall in costs of production; and unless money wages can be reduced, profits are bound to suffer. The result, therefore, is likely to be unemployment and depression.

2. *A constant volume of money per capita.* For this reason, therefore, it would be best to have, not a constant supply of money, but rather a constant supply of money per capita. Under these circumstances, increase of output brought about by increase of population would be taken care of by an appropriate increase of money and would involve no change in the price level. But other increases of output (which can be summed up as increases in output per capita, and are due to "improvements") would not be accompanied by any increase of money and would involve a fall in the price level. Under this arrangement, if no change in population occurs, the aggregate money income of the community would be unchanged, irrespective of changes in aggregate output.

The real income of the community would rise and fall in proportion to changes in the aggregate output.

It would be assumed, of course, that changes in velocity of circulation and in the coefficient of monetary transactions would be compensated for by appropriate changes in per capita money.

Is this standard a just one? Even with all these precautions, there are objections to the constant-volume-of-money-per-capita standard. (a) In the first place (and this is an objection that applies also to the constant volume of money standard) entrepreneurs introducing innovations and technological improvements would not enjoy more than the normal level of profits; or if they did, by virtue of some degree of monopoly, other entrepreneurs would have to get along with less than their normal profits. The fall in prices would bar more than normal profits for the system as a whole. Whether this result would leave a reasonable stimulus to undertake the risks of innovation is doubtful. To meet this, the alternatives are either some reduction of wages with attendant industrial conflict or a sufficient increase of money-per-capita to leave more than normal profits for the system as a whole. That is to say, it is arguable that some relative inflation is a necessary (and reasonable) price to pay for technological advance.

(b) A constant volume of money per capita means that, although real wages may rise, money wages cannot do so. If wage earners were educated to think in terms of real wages, this situation would not be objectionable. But, in fact, wage earners seem to reckon in terms of money wages. When these rise, people are getting on well; when they fail to rise, people are discontented, and they will resist reductions in money wages, even where real wages might thereby be raised. For this reason, it may make for less discontent and industrial conflict if a standard of money is adopted under which money wages as well as real wages may rise.

(c) A stationary per capita money income with a falling price level means that the gains of production from technology are shared throughout all society. All income receivers stand to gain, and gain proportionately, from the reduction of prices. Hence not only the wage earners, but the recipients of property incomes, incomes from rents, interest, and dividends share in the gains. There are some who argue that this is not socially desir-

able; that, on the contrary, a standard that will benefit earned, and penalize unearned, incomes is a more desirable one. A proper monetary policy will serve to redistribute the national income on a broader base. It should not attempt to be "neutral." One of the fundamental causes of our cyclical troubles in a faulty distribution of income; and here is a chance to correct it. (Underconsumptionists would be fond of this argument.)

These various reasons lead some to favor a fixed purchasing-power standard, which must now be examined in detail.

3. *A constant-purchasing-power standard.* Under this standard, the total monetary supply would be so regulated that the price level of some collection of goods would remain substantially constant. This standard involves the necessity of deciding which collection of goods shall be stabilized in price, and means that this kind of standard is more ambiguous than the fixed-volume-of-money-per-capita standard. Thus, to take two alternatives, the prices of goods at wholesale could be stabilized, using an index number similar to that of the Bureau of Labor Statistics; or, on the other hand, the prices of goods entering into common consumption, as reflected in wage earners' purchases, could be stabilized, using an index of cost of living. Which to use would depend largely on what was expected to be accomplished. If the aim were to eliminate the windfall profits and losses of entrepreneurs, the wholesale price level would appear to be the more appropriate. If the aim were to stabilize the consumption of the people as a whole, the cost-of-living index would seem more appropriate. Which aim is more desirable would have to be decided largely on one's theory of what causes cycles.

In any case, whatever the appropriate prices to be stabilized, this standard means that the aggregate volume of money must be increased with every increase of output. Thus whereas, in the fixed-money-per-capita standard, total money income can only increase when population increases, in this case total money income will always increase when aggregate output increases.

Now it is evident that, when aggregate output increases because of improvements in methods of production, so that costs are falling, the result of a stable price level will be to increase profits above normal, unless wages or other incomes are increased. This increase of profits above normal, what Keynes calls "profit infla-

tion," is a prime factor in disequilibrium and must lead to the very boom which stabilization of prices was designed to prevent. Indeed, this outcome seems to have been our experience in the great American boom of the 1920's, when, although prices were remarkably stable, falling costs unaccompanied by equivalently rising wages brought about a great profit inflation.[7]

It is, therefore, essential to the effectiveness of a fixed-purchasing-power standard that wages be raised to that level where wage earners may share adequately in the gains of production, and producers' profits be held at such levels as to prevent an expansion that cannot be maintained. Provided this level can be agreed on (and no merely monetary policy can determine it), then the result of the standard is essentially this. Aggregate money wages and, with them, real wages would rise with every increase of output; where the output was an increase per capita, money wages per capita would also rise. Profits would presumably be relatively stable. But the recipients of fixed income, such as interest and rents, would be penalized. Their real income would neither rise nor fall, but in the aggregate would represent a diminishing fraction of the national income. They would not share, during the period of their claims, in any increase of the national income, either monetary or real.

Any monetary standard involves social policy. It is evident from what has been said that the merits of the two principal alternative standards, a fixed-money-per-capita standard or a fixed-purchasing-power standard, must be judged in the light of broad social policy rather than by purely monetary considerations. Which standard will make fewer disputes between labor and capital? Which would better stimulate improvement and innovation while causing their advantages to be widely diffused? Which better satisfies the requirements of social justice, requirements that in the long run may turn out to be requirements of social efficiency? More particularly, which works out better in the long run, a system that shares gains with everybody, or one that penalizes the *rentier* for the benefit of earned incomes such as wages?

In short, monetary stability turns out to be no easy road to industrial stability. There are problems involved here that no monetary policy can solve. There will still remain the acute

[7] See Chapter 14.

problem of the division of the product between capital and labor. Lying concealed in this is the extremely difficult problem of adequate reward for the risky innovations that, in the past, have seemed to be the source of our advance. For the sake of avoiding the evils of alternating booms and slumps, we may, as Keynes puts it, be condemning ourselves to a chronic situation of semi-slump.

There still remains the question of price inequalities and divergence. Even though the general level of prices is controlled, there may still be instability and inequality of individual prices owing to different degrees of monopoly and competition in different fields. If a standard is adopted that is designed to cause prices to fall with improvements in production, it is vitally important that the right prices fall. If concentration of control happens to give power over price to the very concerns whose prices should fall, trouble is bound to emerge, for they would be certain to resist price reduction, and their increased volume of output could then be sold only by attracting an undue share of the limited money volume of the community. This situation must put a heavy strain on the price levels of all other producers, who, with no reduction of costs to help, would be in a sad condition. The general fall in the price level may be attained therefore by a fall not in areas where costs have gone down, but in areas where costs have stayed up. That this result would be disruptive of the productive and exchange mechanism of the community is hardly to be denied.

In other words, even though means are available to eliminate the disturbing effects of monetary influences, it is not implied that no other policy is needed. If prices are to fall, the right prices must do the falling. If frictions or monopolistic control, or any other institutional factor, prevents this from being attained, then society must proceed against these obstructive influences if it is to reap the complete advantages which monetary stabilization is expected to bring about.[8]

[8] See Chapter 25 on Price Policy.

20

MONETARY MANAGEMENT: INTERNATIONAL MONETARY RELATIONS[1]

IT HAS BEEN ASSUMED, in the discussion to this point, that monetary stabilization can be undertaken effectively by a single country without regard to international relations. But international relations definitely complicate the problem of control. A country with international relations is tied to the rest of the world. Fluctuations in employment, incomes, and price levels in any country tend to spread across its borders, and it may not be easy to achieve domestic stability if a country is exposed to the variations in imports, exports, capital flow, and gold inflow and outflow which may be imposed upon it by external fluctuations.

In a country on an international gold standard, or on any standard with fixed exchange rates, these difficulties, as we shall see, are substantial, and in fact are among the reasons why the gold standard has lost its nineteenth century popularity. Greater internal control can be achieved through modified gold standards, or by the freely fluctuating exchange rates of standards divorced from gold. But the sacrifice of external stability involved in these alternative systems raises other problems to plague the world. We face the dilemma that we can have external stability or internal stability, but not both. And we must examine what work-

[1] The student will find excellent surveys of international monetary problems in George N. Halm, *Monetary Theory*, 2nd Edition (Philadelphia: The Blakiston Company, 1946), Part II; and A. G. Hart, *Money, Debt and Economic Activity* (New York: Prentice-Hall, Inc., 1948), Part IV. For detailed discussions of international currency relations, see R. Nurkse, *International Currency Experience* (League of Nations, 1944). Also various papers in the series of Essays in International Finance, issued by Princeton University. See also J. E. Meade, *The Economic Basis of a Durable Peace* (New York: Oxford University Press, 1940).

able compromises are possible in order to resolve this unfortunate conflict.

In the following pages we will discuss in order: (1) problems involved in an international gold standard; (2) problems involved in a domestic standard divorced from gold, and with freely fluctuating exchanges; and (3) the compromise mechanism of the International Monetary Fund as a possible means of achieving reasonable external stability in a world where the leading countries are concerned, above all, with the maintenance of full employment of their people.

National Stabilization Under an International Gold Standard

A fully international gold standard involves two conditions: (1) that all countries on the gold standard fix the value of their national currency units in terms of gold; (2) that gold may be freely imported and exported. This means (3) the further condition that the rates of exchange amongst all currencies are fixed, and that international payments can always be made at these fixed ratios, or more exactly, within a small range from these ratios determined by the slight costs of shipping gold.

Assuming now that a certain country A is on such a standard, and is for the moment in equilibrium in respect to its international balance, what would be its position in the event of a depression setting in abroad in country B, which may be taken as standing for the outside world?

Country A's exports to B will be reduced, and it will now have an excess of imports. The demand for B's currency to meet this import balance will raise exchange rates to the gold export point, and gold will flow out of the country. This reduces A's monetary reserves, and increases the reserves of B.

These changes in respect to A's exports (and B's imports) and the monetary reserves of both countries set up a series of cumulative responses.

In A, the loss of export trade reduces incomes in all trades affected. If this income had been used to buy imports, imports would be cut equally and a new balance attained. But some, perhaps most, of the income would have been used to buy home-produced goods, the demand for which is now reduced. This reduc-

tion is transmitted from one group of income receivers to another, bringing about a total reduction indicated by the multiplier.

In addition, the flow of gold from A to meet adverse balances reduces bank reserves and makes for deflationary pressure on the whole economic structure. If the reserve banks feel it incumbent on them to retard the flow of gold by raising the rate of interest, the check to investment expeditures would add to the circle of contraction.

These deflationary consequences tend thus to reduce the general level of expenditures, incomes, and prices in country A, and will, oppositely, tend to counteract the current fall of expenditures, incomes, and prices in country B. These opposite consequences tend to restore the equilibrium in the balance of payments between A and B. The fall in incomes in A will reduce imports, the fall in prices will increase exports. And in B, the recovery of income will increase its imports, and the recovery in prices reduce its exports. These changes will proceed in diminishing force until a new equilibrium is reached.

If costs and prices are readily reduced in A, the restoration of equilibrium may not be long delayed, for forces are working on both sides of the balance sheet, the fall in income reducing imports, the fall in prices increasing exports. But in modern economic systems, costs and prices have become increasingly inflexible. Many prices are supported by legislative measures. This support is particularly important in respect to agricultural commodities since they enter largely into international trade. Money wage rates are not easily reduced, subject as they are to labor union bargains, and maintained frequently by the force of convention. When prices and wages are thus rigid, the deflationary forces work out mostly through reduction of employment and production; and it may be a long time before prices and costs adjust themselves to lower levels. Under these circumstances, only one aspect of the balance of payments is affected. Imports are reduced, but the expansion of exports is impeded. Thus the national output must fall farther than would be the case if wages and costs were more flexible.

Thus with an international gold standard (or with any international standard with fixed exchange values) fluctuations of income and employment are transmitted from one country to an-

other. In our illustration, A is compelled to participate to some degree in B's depression. And B is able to reduce and moderate its difficulties by transmitting some of its unemployment and reduced income to A. Thus depression in any one country is generalized, and by being generalized, it is spread thinner all over the world.

Similar and opposite consequences arise in A if an expansion takes place in B. A will experience an increase in exports, an inflow of gold, a cumulative expansion of effective demand, output, and employment as B's expansion is transmitted across her borders.

Thus booms and slumps are spread from one country to another, and it would seem that a country that is intent on stabilization, and at the same time is determined to adhere to the gold standard, may have some difficulty in harmonizing these two ambitions.

An International Gold Standard Hampers National Stabilization

Thus suppose a country on the gold standard works through its central bank(s) to prevent the contraction imposed upon it by a depression abroad. Assuming that it desires to maintain both the level of income and prices, then neither of the equilibrating forces that might restore equilibrium is set in motion. The maintenance of income does nothing to reduce imports, and the maintenance of prices does nothing to expand exports. The balance must be met by a continuing outflow of gold, which goes on as long as depression lasts abroad, or as long as the gold supply lasts at home. If the central bank persists in its determination to maintain incomes (and prices), the ultimate result must be the exhaustion of the gold supply and the abandonment of the gold standard. This result will be hastened by the fear of its coming. For if there seems to be danger of the gold standard being abandoned, the demand for foreign funds may rise rapidly and the flight from the home currency bring an accelerated ending to the gold standard.

Similar and opposite difficulties emerge if there is expansion abroad, and the stabilizing country, being satisfied with its level of income and employment and fearing possible inflation, is determined to avoid expansion at home. As it does nothing to

reduce the demand for its exports, or to expand its own imports, it will be exposed to a steady flow of gold into the country. This continued flow of gold must be prevented from raising incomes—and effective demand—if expansion or inflation (or both) is to be avoided. And prevention may be embarrassing to the central banking system.

If the gold is paid for in cash, the result is to increase the balances of the generality of banks at the central banks, and therewith weaken the ability to control the market by changes in bank rate. If, on the other hand, the gold were paid for by sale of securities, then, although reserves of banks in the central bank are not changed, the open-market operations of the central bank are progressively weakened, as they "shoot all their ammunition away." Thus successful stabilization involves the costly exchange of cash or securities for an embarrassing supply of gold, which must either be sterilized at considerable cost or remain a constant and growing threat of sudden inflation.

Thus stabilization in a nonstabilizing world seems to land any one country in a serious dilemma, either forcing gold upon it that it does not want, or taking away gold that it would prefer not to give up; at the worst, exposing it to the risk of either serious inflation or the abandonment of the gold standard.

In short, central banks seem to suffer from the same limitations in respect to the world community that restrict the banks of a given nation in relation to each other. Just as, in a multiple-bank system, no bank can increase or decrease its outstanding credit at a pace much different from that of its fellows, so central banks find their behavior regulated by the behavior of central banks in general. The gold standard, as Keynes puts it, essentially ensures "that no Central Bank shall inflate or deflate at a pace very different from that of its neighbours." "Each Bank is necessarily governed by the average policy of the Banks as a whole," and this situation "hampers each Central Bank in tackling its own national problems, interferes with pioneer improvements of policy the wisdom of which is ahead of average wisdom, and does nothing to secure either the short-period or the long-period optimum if the average behavior is governed by blind forces such as the total quantity of gold, or is haphazard and without any

concerted or deliberate policy behind it on the part of the Central Banks as a body." [2]

Some individual stabilization is possible

Doubtless some central banks are more exposed than others. If the normal reserve ratio of the central bank is high, so that loss or gain of gold can be readily absorbed in changes in the volume of reserves, the national economy may be reasonably protected from gold movements. Thus the United States in the 1920's, or France before the First World War, would have more freedom than England, where the Bank of England normally operates on a low ratio of reserves. Low ratios are economical but sometimes dangerous.

Again, if the country has a relatively small fraction of foreign trade and investments, local stabilization will be so much less restricted by the consequences of inflow or outflow of gold. Similar results would follow from high tariffs or other impediments to foreign trade.

Furthermore, central banks, by appropriate changes in their rates of interest, which cause the fringe of international financial business to be transferred, as it readily can be, from one center to another, may affect somewhat the flow of reserve resources. Thus a loss of gold may be averted and a gain shut off before the flow has had time to affect internal stability. But this process incurs the risk of discouraging or encouraging investment expenditures, thus bringing about an unwanted contraction or expansion of effective demand.

If a central bank, therefore, is ready to allow wide variations in its reserve ratios, and if its national economy is not too sensitive to foreign trade, it may enjoy considerable stabilizing power over its internal price structure and industrial activity, even though adhering faithfully to the gold standard. This premise holds out hope that at least minor fluctuations might be ironed out by the leading banking systems, but enough has been said to throw strong doubts upon the ability of any country on the gold standard succeeding by individual action in adequately preventing or controlling the major booms and depressions.

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[2] J. M. Keynes, *Treatise on Money* (New York: Harcourt, Brace & Company, Inc., 1930), Volume II, pp. 286–287.

International agreement desirable but improbable

This conflict between the operation of the international gold standard and a deliberate policy of internal stabilization is not, however, unavoidable. It could be resolved by appropriate international agreements, and indeed this kind of approach was the hope of the 1920's, when restoration of peaceful economic international relations seemed still to be within reach.

That is to say, if the leading central banks could be persuaded to adopt broadly uniform policies of stabilization, the hindrances to effective action might be greatly reduced. For example, if reserves could be varied by law or convention within reasonably wide limits (Keynes suggests a maximum variation of 20 per cent above or below normal), expansion and contraction of total bank credit could be reasonably regulated, especially if all banks would adopt a uniform discount policy and adjust discount rates, fortified by appropriate open-market dealings, to a program designed to prevent undue differences in expansion and contraction between different regions. This policy would do for the financial world what the open-market committee of the Federal Reserve System was designed to do for the Federal Reserve districts—namely, prevent the controlling measures of one bank from being upset by the inappropriate action of others. These policies would be greatly facilitated if the central banks were attached to some permanent institution, the prime duty of which would be precisely the job of supernational monetary management. This was to have been the task of the Bank of International Settlements, set up under the auspices of the League of Nations. The International Monetary Fund, discussed later in the chapter, will do something to supply this need.

International measures of this nature were the hope of the 1920's, seeming as they did to point the way, by a logical development of national central banking systems, to international monetary cooperation for the benefit of all countries. They might have resolved the conflict between internal stabilization and the operation of the international gold standard. The great depression of the 1930's effectively put an end to these developments. The gold standard broke down, and nations moved to solve their problems by national management of currency. National cur-

rencies with widely fluctuating values, or gold currencies subject to substantial devaluations, or changes in the mint price of gold, took the place of the gold standard. New and different problems arise when the traditional gold standard is replaced by a nationally managed currency.

Managed National Standards

We must now examine the situation of a country with a currency divorced from gold (though gold may be used for international payments) and with exchange rates allowed to fluctuate freely. We will assume that the country is prepared to manage its currency so as to maintain high and stable levels of income and employment, and some definite standard of prices. As we have seen, this standard need not to be a stable or fixed price level. It might be desirable to have prices gradually fall; it is even arguable that they should be permitted gradually to rise. Whatever the choice, some standard is set up, and when such a standard is set up the volume of money must be appropriate to maintain it.

Assuming now a depression abroad, with consequent reduction in our exports, and possible expansion of imports, what will be the consequences to the country with an independent currency?

Whereas under the gold standard, the rise of imports over exports would raise exchange rates but only to the gold export point (when gold would begin to move out), under independent standards exchange rates have no such ceiling but may rise to whatever level is justified by the relation of the demand for foreign exchange to its supply.

This rise in the price of foreign currencies has a double effect. It raises the price of imported goods in the home market, and lowers the price of exported goods in foreign markets. Thus if the exchange rate between Great Britain and the United States has been £1 = $4.00, and by depreciation of the United States' currency the rate becomes £1 = $4.40, then all goods purchased from Great Britain rise by one-tenth and all goods bought by Great Britain fall by ten-eleventhS.

These changes in prices will discourage imports and encourage exports and will continue to do so until the adverse balance of payments that set the process in motion disappears, and equilibrium is restored.

Thus no general transfer of purchasing power such as is involved in the gold standard takes place, no general change in the national income, no general deflation, and no tendency toward depression. Instead there is, *via* the depreciation of the currency, a shift in export and import prices; i.e., in the price structure of goods and services involved in the international balance of payments. This shift would seem to involve some corresponding shift in the composition of output, but the consequences would appear to be much less disturbing to the internal economy than those imposed by the gold standard.

The greater stability of the domestic economy, however, is achieved by the sacrifice of external stability. The country gives up a standard in which exchange rates are stable but the economy is exposed to inflationary expansions, and adopts a standard by which deflationary pressures are avoided but exchange rates lose their stability. And this instability may be serious. For not only are exchange rates flexible, but they may vary over wide ranges. Experience indeed shows that they may be subject, over the period of a cycle, to decidedly erratic fluctuations, due partly to the violent shifts in demand schedules for imports and exports that occur in cyclical fluctuations, partly to the effect of speculation on the course of exchange rates, which tends to make rising rates go higher, and falling rates lower than otherwise would be the case.

The disadvantages of these fluctuating exchanges may be considerable. Even in the internal economy the continual shifts in production between export and home-market industries, which are the probable result of fluctuating exchange rates, are bound to be a hindrance to stability and likely to cause some "frictional" unemployment. On the level of foreign trade and investment the consequences may be much more serious.

Hindrances to Trade and Investments from Unstable Exchange Rates

In regard to trade, the fluctuations of the exchanges may change the value of foreign currency even in the relatively short interval between sale of the goods and receipt of payment. This fluctuation introduces a risk into commerce that adds to its cost, and both because of the cost and because of direct discouragements arising from the risk, the volume of trade may be reduced. One must

observe, however, that these risks can be reduced by the use of "forward exchange." By this device, banks dealing in exchange will, for a price, contract to buy or sell exchange on specific foreign countries at future dates at definite agreed-upon rates. This device does not remove the risk as such, but it does shift it to the shoulders of the banks. If they in turn can hedge their purchases of currency from exporters by corresponding sales of currency to importers, they not merely shift the risk, but eliminate it altogether. Whether or not this mechanism would work effectively in the event of wide fluctuations of exchange, such as would occur when powerful price movements had to be counteracted in the stabilizing country, is problematical; but at least the exchange difficulty in regard to trade has some possible corrective.

In investment, however, the difficulty is more profound. Here the contracts cover a much longer period than could possibly be covered by forward exchange. The risk of loss by exchange fluctuation is greatly increased and would have to be borne by either borrower or lender. If the stabilizing country were a creditor nation, it might shift the risk of loss to its debtors by providing that payments of interest and principal be made in its own currency. But this provision would not increase the enthusiasm of debtors in regard to borrowing, and in extreme cases, might lead to the defaults that marked so much foreign investment in the great depression, when unfavorable exchange rates added greatly to the burden of the debt.

These deterrent risks are made more substantial by the speculative elements associated with fluctuating exchanges. Changes in exchange rates are likely to encourage expectations of further change in the same direction, and be a direct cause of capital transfers of magnitude, not serving any useful function in the process of adjustment of balances of payments. When this happens exchange fluctuations become erratic to a degree, and cease to perform effectively their reasonable function of adjusting the balance of payments.

One would have to admit, therefore, that a nationally managed currency would necessarily involve some more or less considerable contraction in the volume of international trade and investment. The degree of this handicap would depend on how important foreign trade and investment happened to be. For Great Britain

in years past it would have been a high price to pay, not only because of the high importance of foreign trade and her great investment position, but because, through these things, Great Britain had gained and maintained a supreme position as an international financial center, which might not continue if exchange stability were gone. Indeed any country that aspires to get or keep a large share of international banking business might have to sacrifice some domestic stability to do so, and ask just how high a price in internal instability it is prepared to pay.

For the United States, with its large holdings of gold and its relatively independent position in regard to both trade and finance, the difficulties may be less important. If the current wave of economic nationalism persists, and the popular distrust of international lending arising from the sad experience of the great depression also continues, then the disadvantages of exchange fluctuations might look small in the face of the advantages of the internal stability, if it can be gained.

Stabilization or equalization funds

To some extent, and under favorable conditions, the stabilizing country may protect its exchanges from undue disturbance by appropriate devices. Thus both Great Britain and the United States found it desirable in the 1930's to set up equalization or stabilization funds designed to ensure that their devalued currencies would not be upset by undesirable changes in exchange rates. In 1934 the United States Treasury established a Stabilization Fund with resources of two billion dollars in gold largely from the profit from the devaluation of the dollar. When the dollar appreciated unduly (encouraging imports, discouraging exports), the Treasury would use its fund to buy foreign currencies, raising their prices until the desired level was reached. When the dollar depreciated unduly, foreign currencies would be sold to keep their prices down.[3]

The essential effect of stabilization funds is to maintain exchange rates within a narrower range of fluctuation than would come about spontaneously. Thus the value of the currency is

[3] Actually, the operations of this fund were small, never more than $200 million being in active use. The remaining $1,800 million has been transferred to the International Monetary Fund to meet the subscription obligation of the United States.

not allowed to rise or fall to its "equilibrium" level, where supply and demand are equal. Stabilization funds can usefully prevent erratic and speculative movements of exchange rates, which have no functional value in helping to restore export-import equilibrium; and in regard to short-time fluctuations they seem to be reasonably effective. But a persistent disequilibrium may exhaust or overstrain the fund. Thus if the value of the national currency were pegged for long above the equilibrium rate, the fund might finally lose its reserves of foreign currency or gold; whereas if the currency were pegged for long below the equilibrium rate the fund might find itself with an embarrassing supply of gold and foreign exchange.

Economic monetary warfare

Hindrances arising from unstable exchanges make the stabilizing country sacrifice some of the benefits from foreign trade and if generalized might make the world somewhat poorer, yet these consequences are more unfortunate than dangerous.

There are, however, other aspects of national monetary management that are less innocent and may be a serious threat to the economic stability and even the peace of the world. They arise when monetary controls become the instruments, or serve as stepping stones to the use of instruments, of economic warfare. This danger was perilously shown in the exacerbated economic conflicts to which the nations gave themselves in their eagerness to find a way out of the prevalent depression of the 1930's. We refer particularly to competitive currency depreciation and exchange control.[4]

(1) *Currency depreciation.* We have noted how, when currency is allowed to depreciate under the impact of an excess of imports over exports, the temporary effect is to penalize imports and encourage exports. It is equivalent to a general duty on imports and a general subsidy on exports. But depreciation of a managed currency can be deliberately brought about by action of the monetary authority, even though trade were in equilibrium, and no tendency were at work to change the external value of the currency. A country in a depression with a large volume of unem-

[4] George Halm, *Monetary Theory*, 2nd Edition, discusses these practices under the significant title, "Pathology of International Payments."

ployment, and possibly surplus stocks of exportable materials might find it convenient to depreciate its currency in order to stimulate its exports, and at the same time penalize its employment-reducing imports. This amounts to setting a price on its currency below the equilibrium rate, or to put it otherwise, a price on foreign currencies above the equilibrium rate. As a consequence, supplies of such currencies or of gold through exports would exceed the demand by importers; and the monetary authority would have to be prepared to buy up this additional supply with its domestic currency. Being able to increase its domestic currency at will, it can continue to carry on this purchase as long as it does not run into international opposition.

But opposition is sure to arise. What the stabilizing country gains, other countries lose. And it is not to be expected that these will sit idly by while beggar-my-neighbour policies impose losses upon them. Stabilization is a game that every country might like to play, and the interests of each not being the same, the result might be a good deal of conflict for all and stability for none. Currency depreciation during the depths of the great depression came to be a weapon of international strategy. It seemed a seductively simple way of curing internal distress, for, by stimulating exports, it helped to get rid of unwieldy surpluses of goods, especially agricultural goods, and it seemed to promise a gradually increasing internal price level brought about by the contagion of higher export and import prices. Although it was all very well for any given country, this way does not work out so simply when all countries join in the game. Then currency depreciation ceases to be an effective weapon, for the depreciation of each is met by the similar depreciation of all, and if this goes on on a competitive basis, international monetary relations become more precarious.

That this is no mere theoretical possibility is shown by the experience of the world during the great depression of the 1930's, when the nations of the world entered into a prolonged competition in the devaluation of their currencies.

In 1931, Great Britain, plagued by persistent deflation, devaluated the pound, and was followed by the United States in early 1934. These devaluations[5] gave an export advantage over com-

[5] Devaluation used here in the sense of depreciation and stabilization at a lower level. See League of Nations, *International Currency Experience*, p. 122.

petitors and made it particularly difficult for countries that persisted in maintaining the gold standard.

The extent of the devaluation was so considerable as to make for a substantial departure from equilibrium. The external value of the currency expressed in foreign-exchange rates reflected quickly and faithfully the changes in the gold content of the devalued currencies. The internal value, reflected in sluggish and relatively inflexible prices, moved but slowly. Hence exports from the devaluating countries were greatly stimulated and the persistent unbalance in their international payments tended to produce a prolonged inflow of gold.

These conditions exposed the gold-standard countries to severe deflation. Under this pressure the Gold Bloc, consisting of France, Belgium, Switzerland, and the Netherlands, was forced to abandon the gold standard, and by 1936, all had gone over to currency devaluation. It was to meet this situation that France, England, and the United States entered into the tripartite currency agreements of 1936, later extended to Switzerland, Belgium, and the Netherlands, the avowed purpose of which was the maintenance of stable exchange values among these three great democracies. Thus we have a very curious and unexpected result of the attempt to free the monetary systems of the several countries from the dominance of an international gold standard. National stability, based on a managed currency, proved to be exposed, for all the efforts of the stabilizers, to international disturbance; and compelled bringing in by the back door, as it were, the international standard which had been pitched out the front. This result, as far as it went, was what the tripartite agreement amounted to. It was a striking evidence of the desire for exchange stability.

(2) *Exchange control.* Individual governments, once they have abandoned the gold standard, may choose to exercise direct control over all ingoing and outgoing payments. This is exchange control. It means that all foreign exchange transactions are carried out through a central government agency. The state becomes the sole buyer and seller of foreign exchange at rates which it will determine. If a person wants foreign currency, whether to buy goods, or to travel, or to export capital or for any reason, he must apply at the central office. If he has acquired foreign exchange from any transaction he must sell it to the central office.

This gives a government complete control, save for evasion, (which can be stopped) over all export and import transactions. As all commercial and financial relations with the different countries can be modified at will, exchange control is a weapon of great and far-reaching power. Not only will it profoundly affect the structure of a nation's internal and external trade, but it can be a potent weapon in discriminating between countries and in the service of commercial bargaining. It can, too, be a serious threat to peaceful international relations.

For countries that have abandoned the gold standard, but find the fluctuating exchange values of a paper standard undesirable, exchange control offers a ready and efficient mechanism for harmonizing internal control with the exigencies of economic relations abroad. But like currency depreciation, it is a game that other countries can play. Carried to its logical conclusion, it leads to economic isolationism, a great reduction of foreign trade with loss of the benefits derived therefrom, and adds substantially to that economic friction which may be the prelude to war.

We may conclude, therefore, from the experience of the world with the consequences of nationally managed currencies during the 1930's, that internal stability is hard to maintain without contributing to instability elsewhere. The fluctuating exchange values of national currencies raise problems that are not easy to solve, and competitive currency depreciations benefit no one. Furthermore, it would seem that the quest for stability leads nations progressively into controls of greater power and complexity, which contribute no little to a decline in world trade, and in the end not only confer no lasting benefit, but may well become a serious menace to world peace.

The International Monetary Fund

These considerations lead us back to the merits of the international gold standard. Apart from offering stability of exchange rates, itself a benefit of considerable importance, the international gold standard had the great advantage of substituting an impersonal, semi-automatic mechanism for the relatively unpredictable, and politically dominated, measures of national monetary authorities. It imposed uniform behavior on all countries and thus avoided the disturbances due to the operation of national policy.

If it were possible to modify the gold standard in such ways as to eliminate its deflationary tendencies, and to permit reasonable scope for independent domestic action (which no country is willing to give up) it might be made into an acceptable mechanism for international monetary relationships under present-day conditions.

This modified gold standard is the purpose of the International Monetary Fund established by the Bretton Woods Agreements of July 1944.

The Bretton Woods Agreements arose out of an international conference of the representatives of 44 nations held at Bretton Woods, New Hampshire, in the summer of 1944. Agreement was reached to establish two financial institutions, the International Monetary Fund, and the International Bank for Reconstruction and Development. The Bank is designed to make or facilitate long-term productive loans to member countries. The Fund is designed to restore conditions under which current transactions arising out of foreign trade could be settled smoothly and without harmful pressure on the economies of the participating countries. It is the Fund that concerns us here.

The International Monetary Fund (like the Bank) though affiliated with the United Nations, is an autonomous organization. Its members are those national governments which ratified the agreements adopted at Bretton Woods, and subscribed the necessary quotas that constitute the Fund. Both the Fund and the Bank began their formal existence in December 1945 when ratifications representing 80 per cent of the total subscriptions had been made.

The International Monetary Fund does the following things:

1. It sets up gold as the international unit of accounts, with par values of member currencies expressed in terms of either gold or U. S. dollars.

2. It allows flexibility in the par values of member currencies, whereby a member country may change the par value of its currency, when necessary to correct a fundamental disequilibrium. If the change is no more than 10 per cent, notification of the Fund is all that is required. For greater changes the Fund must consent.

This rule, together with the provision that members agree to buy and sell gold at a price varying from par only by prescribed margins, excludes competitive exchange depreciation yet allows sufficient leeway to members to make necessary adjustments when otherwise a persistent disequilibrium (usually excess of imports) in its balance of payments would upset the economy.

3. It allows, subject to the approval of all members of the Fund with quotas of 10 per cent or more, a uniform change in the par values of all member currencies. Thus in the event of a growing scarcity of gold, owing (say) to the falling productivity of gold mines, a general devaluation of currencies could be made allowing greater issues of currency for any given amount of gold, and allowing all international obligations, including subscriptions to the International Monetary Fund, to be met with a smaller amount of gold.

4. It sets up a fund of gold and member currencies to which all members contribute in established quotas, and upon which they may draw, under definite rules of purchase and repayments, to meet short-time disequilibria in the balance of payments. Members may obtain currencies of other members in exchange for their own currencies.

Excessive use of this privilege is prevented by limits on the amount of other members' currencies a member may obtain in any one year and in total, and by certain mandatory provisions for the repurchase of its currency, and discouraged by a scale of charges increasing with the amount of a member's currency held by the Fund in excess of its quota, and with the length of time over which it is held.

By these provisions, the violent domestic adjustments imposed at times by the export of gold under the gold standard can be avoided and temptations to use currency depreciation be minimized.

5. In return for these benefits, the Fund requires that its members in principle impose no restrictions on payments and transfers for current international transactions. Members may control capital movements, or may be required to do so by the Fund. But exchange controls may be set up only with the approval of the Fund and existing controls on current transactions must be removed as soon as possible. These provisions are aimed at the

beggar-my-neighbour policies that were the bane of the 'thirties and threatened to make for a seriously divided world.

The International Monetary Fund is a compromise between the conventional international gold standard, which is apparently gone never to come back, and the relatively chaotic operation of managed national standards. It couples the merits of a genuine international system with sufficient flexibility to permit a considerable degree of national monetary management. And it provides a mechanism similar to the reserves of central banks to alleviate the problems of monetary transfers that plagued the world between the wars.

As far as it goes it is a victory for monetary management. It makes it easier to take appropriate internal measures to moderate business cycles, to protect a country from deflationary influences arising abroad, and to discourage countries from seeking full employment for themselves by exporting unemployment to their neighbors.

What it does not do is to strike at the source of deflationary influences. It makes deflation in other countries less dangerous to stabilizing countries, but it does not attack the deflation itself. It gives some protection against the spread of the disease, but it does not set up any effective mechanism to eliminate the disease at its source.

Hence other measures of international coöperation will be necessary.

If the central banks of the leading countries were able to work out concerted monetary policies designed to exercise in all regions such stabilizing powers as the banking and monetary authorities enjoy, a further step of great importance would be taken. But as banking and monetary control seem to be more effective in attacking inflation than deflation, it would be further desirable to set up some International Investment Fund designed not merely to make loans for rehabilitation and development as is the field of the International Bank for Reconstruction and Development, but to put funds to work with the prime aim of stabilizing cyclical fluctuation of business. This would mean lending funds in a countercycle program, increasing loans at times of incipient depression, reducing them in times of undue expansion; putting

pressure upon repayment in boom, deferring repayment in slumps. Such a program, if made effective in the major regions of the world, might nip depressions in the bud. All would agree that prevention of depression is better than being compelled to inoculate the several countries against their effects.[6]

But these are measures that go beyond the functions of a monetary system. They move into the area of public investment, which will be our concern in the next two chapters.

Why keep gold at all?

The International Fund is a compromise. It does not restore the gold standard. Gold is still used as an international money of account to which member currencies are tied by a flexible chain. Gold is part of the pooled resources of the Fund, and serves to maintain their liquidity. But members of the Fund do not have to adopt the gold standard if they do not want to. Indeed, gold occupies a very attenuated position in international affairs and is but a shadow of the robust gold standard of the past.

The question may be asked, why not be divorced from gold completely? What is the merit of maintaining costly gold reserves, when an apparently simpler solution and one which would lend itself to management more readily, that is to say an inconvertible standard, is at hand?

Any use of gold is costly. It has to be dug out of the ground in remote places with great effort, transported to various parts of the world, and stored away at considerable cost in holes in the ground well away from the frontiers where it would be exposed to attack in war. Internally, gold has ceased to circulate. It is never seen by the public. If it were not there, the public might never know the difference. All this procedure seems most irrational, and an unnecessary concession to what may be only an easily uprooted prejudice of the public; a relic of a time when commodity monies were the rule, and outmoded in a world where the essential money of most countries is a representative one.[7]

Public opinion, however, at least in the United States, is hardly prepared for such radical views. Paper standards have a dishonor-

[6] See J. Viner, "International Finance in the Post War World," *Journal of Political Economy*, April 1947.

[7] See Keynes' remarks on the gold standard in his *Treatise on Money*, Vol. II, Chapter 35.

able history behind them that cannot easily be lived down. The public is said to find comfort in what they think to be the mechanical rules under which gold standards operate. It is true that what is left of the gold standard, under central banking policies, is already much more managed than might appear on the surface. But many still hold that a paper standard with its reliance on human judgment exposes the monetary system and the whole business structure to the consequences of unavoidable mistakes, political considerations, and sheer folly.[8]

Economic wisdom is not easy to find, nor does it always reside in authoritative bodies such as would be in control of the monetary volume; and many feel that the shortcomings of a mechanical system (particularly if they are reduced to a minimum by the flexible standard of the International Monetary Fund), are easier borne than the risk of folly, mistakes, and pressure involved in more human control.

Because of these considerations, a managed gold standard seems likely to be preferred to any paper one. The public likes to have its prejudices catered to, and even though the supply of gold is rigidly excluded from circulation and not even allowed in banks, it seems to promise more stability to have it somewhere than finally to give up the last vestiges of what may be an obsolete system. It may be well, as Keynes suggests, to give "formal homage and the courtesy title" to gold, even though this involves (it is all it can involve) a certain annual expenditure on purchasing the current output of the mines. Indeed, this annual expenditure (largely by the United States) may be very pleasing to countries with considerable gold mining interests, particularly South Africa, and through that country, Great Britain. And of course it might prove embarrassing to the United States to find outlets for its vast stock of gold, if it were deprived of its money function, and had to depend on its relatively minor alternative uses.

Perhaps the most important reason for the acceptance of, if not insistance upon some kind of gold standard, even in its present attenuated form, lies in the realization that some kind of international monetary is essential to the unity of the world, and that international acceptance of any standard not in some way linked

[8] See for example, the publications of the Economists' National Committee on Monetary Policy.

to gold is at present improbable. But there is another defensible standard that has attracted a growing interest, which might some day prove a desirable substitute for gold. This is the commodity reserve standard, which we must now examine.

A commodity reserve standard

A possible compromise between a humanly managed standard with its unpleasant exposure to the fallibility of administrators and the traditional gold standard, the defects of which are sufficiently familiar, is the commodity reserve standard based on a considerable number of basic internationally used commodities.

In a commodity reserve standard the unit of money is the price of a group of basic commodities, the weights of each based upon its relative importance to the economy. The constituents of each group would, of course, vary somewhat from country to country, and the weight given to each in any system would have to be modified from time to time to adjust to their changing importance. A typical list is that suggested by Benjamin Graham,[9] the foremost advocate of this kind of standard. Mr. Graham's list includes 15 commodities, chosen because of their major importance in world production or world trade or both. The commodities are wheat, corn, sugar, cotton, wool, tobacco, petroleum, coal, wood-pulp, pig iron, coffee, tea, rubber, copper and tin.

The unit of money would then be the price of this composite commodity. Anybody could obtain money by presenting warehouse receipts for the appropriate amount of these commodities. Anybody could obtain commodities by demanding redemption of his money in warehouse receipts. Mr. Graham proposes that the monetary authority on its own initiative sell appropriate amounts of the commodities whenever the composite price rises to 105 per cent of its base, and buy whenever it falls to 95 per cent of its base.

Fixing and maintaining the price of this large array of standard commodities would have a stabilizing influence on all prices and on the whole economy.

Thus if the average market price of this collection of commodities falls as at the onset of depression, people will sell these com-

[9] Benjamin Graham, *Storage and Stability* (New York: McGraw-Hill Book Company, Inc., 1937), and *World Commodities and World Currency* (New York: McGraw-Hill Book Company, Inc., 1944).

modities to the government at the fixed price. The supply of money thus brought into existence will fortify the purchasing power of the people at a time when it is in danger of reduction. The production of standard commodities that otherwise would become rapidly unprofitable can be maintained, and the powerful disintegrating consequences of depression in this sector of the economy avoided.

If, on the other hand, the average market price of this collection of commodities rises, as in boom, then people will redeem their money units in commodities. Thus as the total volume of money is decreased, and the price level further eased by the release from storage of the standard commodities, brakes are applied to the boom and an unhealthy expansion in the primary product sectors of production is avoided.

To a certain degree this process of alternate storage and withdrawal from storage of the monetary commodity occurs under the gold standard. As prices fall in depression, it pays to deposit gold for money, both from industrial uses as the arts, and by increasing the output of mines. And on the contrary, as prices rise in booms, it pays to redeem money for gold to use in the arts, and decrease the output of gold from the mines. But these are notoriously slow and uncertain reactions. Slow, because of the low ratio of yearly additions of gold to the total stock; uncertain, because of the notoriously accidental variations in the discovery of gold.

A group of commodities, such as is the basis of the commodity reserve standard, would, of course, be less subject to accidental variations in total supply than would gold. There *is* safety in numbers. And the appropriate reactions in output would follow more quickly and surely than in the case of gold.

Thus the commodity reserve standard would seem to have a better chance than the gold standard of supplying us with stable prices. And there would be the added merit of avoiding those great and disastrous fluctuations in the prices (output) of the great staple commodities, which have done so much to increase the discontent of primary producers and countries, to enhance general cyclical instability of the industrial world.

Of course nothing in this economic world is perfect, and the commodity reserve standard is no exception. Some of the commodities included therein are subject to the natural fluctuations

of output characteristic of agriculture. All of them might be increased unduly in a severe depression under a guarantee of fixed prices. The first could occasion irrational fluctuations in the volume of money. The second could impose severe costs of storage on the government. Gold with its high value can be cheaply stored. A commodity reserve might become a serious problem.

All things considered, however, the commodity reserve standard might be an acceptable reform. It would improve on the gold standard in the respects mentioned, while retaining its freedom from the uncertain decisions of bureaucratic persons. For as in the gold standard, the total volume of money (or at least basic or primary money) would depend not on the decisions of the administration, but on the wishes of the community.

The commodity reserve standard could of course be adapted to any single country, but it would merely introduce an alternative form of exchange instability, if it were limited to one country, or adopted by different countries on different bases. The concurrent adoption of the standard by the United States and the British Empire would be an important move toward stability. Even better would be a generally adopted international standard.

Such a standard could become a reality if the International Monetary Fund were authorized to issue an international currency unit and to exchange it, both ways, for the agreed-on bundle of commodities. If the Fund also agreed to buy and sell gold freely at fixed prices then the value of gold in terms of the commodity unit would also be stabilized.

If this standard were adopted by the major nations of the world, as in the past they have adopted the gold standard, it might make it possible to realize, subject to the limitations of any human institution, the dual objectives of internal price stability and stability of external exchange rates.

Conclusions on monetary control

We have now completed our survey of the problem of controlling the available supply of the monetary means of payment. We have seen that, for any one country, the problem is essentially twofold: (1) controlling the gold or other lawful reserves of the banking and currency system, and (2) controlling the volume of credit and currency based upon a given volume of reserves. If the vol-

ume of credit and currency based upon a given volume of reserves were a fixed multiple of the latter, then the problem would come down to the control of the volume of reserves. As, in practice, what we have is not a fixed but a variable multiple, the problem remains twofold. It has been shown that the first part of the problem is not easily solved with a metallic standard like gold, for the gold standard is exposed to influx of money metal from mines and from abroad and to undesirable and unstabilizing variations in this influx. A paper standard would supply controllable reserves provided a country approves of monetary management and is willing to pay whatever price is involved in unstable exchanges. Stability of exchanges, along with stability of total internal monetary purchasing power, can be had only by international agreements. This kind of agreement might, through central banks, or the International Monetary Fund, bring about reasonable stability of the world's total gold reserves; but the more complete theoretical stability of international commodity standards, designed for world-wide stability, can be ruled out at present as beyond the realm of practical politics.

If some reasonable stability of gold reserves exists, whether by national or international action, there remains the problem of stabilizing the total monetary purchasing power made available through the banking system. Clearly, as long as the generality of banks are private institutions, and so long as they are allowed the measure of freedom of action that all private institutions must have if they are to serve the public with efficiency, this stabilization can be only approximate. Aggregate money can, however, be made a reasonably stable multiple of the volume of reserves by proper discount policy (aided by open-market dealings), and where the reserves themselves are subject to fluctuation as in the unmodified gold standard, by proper adjustments, through law or otherwise, in the reserve ratios of the banks.

It has been noted, however, that although the total volume of purchasing power in the form of currency and bank credit, particularly bank credit, can be approximately controlled, it cannot be forced into use unless the business system is interested in using it. This limitation, we have seen, means greater powers of control over the periods of expansion than over the periods of contraction; for, whereas there can be limits placed to the credit offered in

times of stress, there can be no limits placed on the volume of credit unused in periods of slump. Indeed, even the control of credit in times of stress may be made more difficult by increases in the rate of velocity of turnover of money (currency and bank credit) at the will and initiative of the users. Hence, the paradoxical situation may arrive wherein the credit authorities may be compelled in good times, not merely to slacken the rate of increase of credit, but positively to reduce the volume available, in order to counteract undesirable increases in velocity. Even this, however, would not be impossible. What is impossible, apparently, is to force money into use, in times of depression, merely by the operation of the banking system.

The problem, however, may not be so severe as it looks if one takes into account the fact that depressions do not usually arrive except as a consequence of booms. If the banks can control booms, they may not have to worry about their problem of controlling depressions. But it still remains true that if depressions come, whether as a result of an unpreventable boom or because of other causes, then even the control of the volume of available money must be supplemented by measures designed to get this money into active use. The measures best adapted to this purpose lie in the field of government fiscal policy, which is the subject of the next three chapters.

21

PUBLIC EXPENDITURES:[1] ADMINISTRATION AND FINANCE

WE HAVE EXAMINED in preceding chapters the devices by which the monetary authorities may remove or counteract certain causes such as price changes, or credit expansion and contraction, which tend to promote undesirable fluctuations in business activity. These devices might be regarded as methods for inducing business to stabilize its expenditures, which, being the greatest source of the income of society, make regularization of first importance for a stable economic system. But we have seen also that the monetary measures at the disposal of the authorities cannot be completely successful. Even in booms their efficacy is limited, and in depressions they may be quite unable to stop the process of deflation. Even the cheapest money may not be a stimulant to business, and the flow of purchasing power that business can set in motion, particularly in its expenditures for plant and machinery, may, despite all efforts, be undesirably reduced.

In these circumstances, the government may have to resort to other means of control. These means consist in the purposeful manipulation of public expenditures and taxes and are commonly

[1] The best economic analysis of public works is J. M. Clark's *Economics of Planning Public Works,* a study made for the National Planning Board, Washington, D. C., 1935. A. D. Gayer, *Public Works in Prosperity and Depression* (New York: National Bureau of Economic Research, 1935), is comprehensive. Two excellent short essays are "The Economics of Public Works," by S. H. Slichter in *American Economic Review Supplement,* March 1934, and G. Bielschowsky, "Business Fluctuations and Public Works," *Quarterly Journal of Economics,* February 1930. The multiplying effects of public expenditures are discussed by R. F. Kahn in his much quoted paper, "The Relation of Home Investment to Unemployment," *Economic Journal,* June 1931. See, also, Benjamin Higgins, *Public Investment and Full Employment* (Montreal: International Labour Office, 1946).

referred to as "fiscal policy." Through these manipulations, government is in a position to modify the aggregate demand for the goods and services of society, upon which the levels of output and employment depend.

Fiscal Policy

The total demand for the product of society (which may be referred to as the Gross National Product) [2] is divided at any given time into three components: (1) private consumption expenditures, (2) private outlays on capital goods, including residential buildings, and commonly called "private capital formation," and (3) governmental expenditures for current services, capital outlays such as "public works," and interest and amortization of the public debt.

For the year 1948 we have the following data:*

Gross national product.....	$252.7 billions of dollars
Government expenditures.....	35.3
Private gross capital formation....	40.6
Consumers' expenditures.....	176.8

* Source: Economic Reports of the President.

In so far as government can modify its own expenditures or bring about modification of private expenditures it can increase or decrease the total of aggregate demand in any given period. Thus the fiscal policy of the government, determining as it does its rates of expenditures, the level and distribution of taxes, and the rate of payments on the public debt, offers an important tool for affecting in the interests of public welfare the level and stability of the total economic effort of the community. Fiscal policy is a particularly suitable device in a free enterprise society, since it can influence promptly the flow of purchasing power without any regimentation of private business. Furthermore the instruments of fiscal policy are not strange or novel. They are the accepted machinery of governments. We are familiar enough with taxes and government expenditures. We are even familiar with their use to modify the income structure of society as through progressive

[2] The Gross National Product is the money value at market prices of all finished consumers' goods and services together with the value of all new capital goods, such as houses, business plants and equipment, produced during a given period. The Net National Product is this value minus capital depreciation.

taxes or subsidies or relief payments. It needs no great jump of the imagination, no notable change in attitudes of the people, to extend their use in the service of stabilization.

Whereas banking and monetary policy would be regarded as the appropriate instrument of stabilization by those who, like Hawtrey or Hayek, hold business cycles to be the consequence of monetary instability, fiscal policy has developed under the influence of Lord Keynes with his emphasis on the importance of maintaining effective demand. Because of this relationship, the emphasis of fiscal policy has been on attacking deflation where the emphasis of banking policy has been on attacking inflation. Monetary theorists, especially those who regard depressions as the result of booms, aim to moderate booms. Those who follow Keynes, regarding depressions as avoidable interruptions to periods of high employment, tend to look upon fiscal policy as primarily designed to attack depression.

The functions of fiscal policy can best be understood if we recall the pattern of analysis developed by Keynes. This pattern may be briefly summarized as follows:

1. Any given level of employment and income can be maintained provided that investment—expenditures on capital goods such as buildings, factories, machinery, and so on, is adequate and no more than adequate to offset what people save at this level of income; i.e., what they do not spend on consumption.

2. Contrary to classical views, there is no certainty that private investment outlets are effectively adapted to offset any given volume of savings. This is the more probable considering that habits of consumption and saving are relatively stable while investment, depending as it does on the varying prospects of profits, is uncertain, volatile, and capricious.

3. As a result we face the possibility that planned investment may exceed or fall short of savings. If it exceeds savings, aggregate effective demand will rise, and if we have started from a level of high employment, inflation will set in. If planned investment falls short of saving, aggregate effective demand will fall and we face a period of deflation.

4. A society therefore that wants a high and stable level of employment, and is not prepared to leave the attainment thereof to

luck, must adopt deliberate fiscal measures designed to maintain or restrain effective demand, whenever it falls below or rises above the level necessary to support the desired volume of employment.

The instruments of fiscal policy

The fiscal devices at the disposal of the government fall into two general classes:

1. Variations in the aggregate of such governmental expenditures as can be varied, deliberately or by some automatic arrangement, with stabilizing effects. Such stabilizing expenditures lie in two major areas: (a) expenditures on *public works,* or communal goods such as roads, schools, post offices, hospitals, parks, and the like; (b) *transfer payments,* not representing any current equivalent in goods or services, such as interest on the public debt, payments to veterans, farm benefits or other subsidies, relief payments, unemployment insurance, and social security benefits.

2. Variation in tax yields or tax rates or the tax structure in such wise as to encourage or restrain private expenditures on consumption or investment. These variations may consist in reducing or increasing taxes in general, or by so modifying the structure of taxes as to increase or decrease the share of income after taxes falling to the classes with a high propensity to consume.

The essential purpose of these fiscal devices is to prevent total outlay from falling below or rising above the volume required to maintain a desirable level of output and employment. If private expenditures bring outlay below these levels (which would usher in a period of deflation as in 1929–1932) public expenditures should be expanded, taxes, especially on consumption or on the classes with a high propensity to consume, should be reduced and the government should incur a deficit. If private expenditures bring outlay above these levels (which would usher in a period of inflation as in 1946–1948) public expenditures should be restrained, public works postponed, and taxes should be maintained or raised, especially on consumption. Thus the government should accumulate a surplus, which could be used to reduce deficits previously contracted. Thus by alternating deficits and surplus, the government might be able to hold total expenditures to more stabilized levels.

Public Expenditures

In the rest of this chapter and in the following chapter we propose to examine the stabilizing possibilities of one kind of public expenditure, that is, public works. This is not to imply that transfer payments do not lend themselves to stabilization. They do, at least to some extent. If payments to veterans cannot always be relied on for stabilization purposes, paid as they may be year in, year out, or paid at inappropriate times as the bonus payments of 1937 or again 1948 coming in periods of inflation, other transfer payments can. This is particularly true of public relief, which, though to some degree continuing in good years and bad, rises sharply in depression; of subsidies to agriculture, such as payments to farmers when agricultural prices fall below parity or some specified proportion thereof; unemployment insurance benefits, which, collected in good times, paid out in bad, are obviously anticyclical in their effects.

But public works expenditures are particularly well adapted to purposes of stabilization, and the problems they raise and their solution throw so much light on the complications of fiscal policy as it relates to any public expenditures that they will be taken as a generalized example capable of standing for all other stabilizing expenditures. Much of what will be said of public works will apply without much modification to transfer payments and to some extent to increases or decreases in the general levels of taxes. More specific analysis of certain types of transfer payments, such as unemployment insurance benefits, and the general problem of tax variation are taken up in Chapter 23.

Public Works

Public works are defined by Clark[3] as "durable goods, primarily fixed structures, produced by the government." They commonly include all public buildings, roads, airports, canals, sewage systems, projects for conservation and development of natural resources such as water power and forests, flood and erosion control, river and harbor development, and similar projects. What they include, of course, depends on the scope of activity normally carried on by governmental bodies as well as on the state of public opinion

[3] J. M. Clark, *Economics of Planning Public Works*, 1935, 2.

in respect to the extension of this activity into relatively new fields. In countries where public utilities are commonly operated by the government, railroads and telegraph and telephone facilities are included in public works, whereas they are private works in the United States. In depressions, deep ones particularly, there is a tendency to widen the scope of public works in order to increase to its maximum the work-giving area. Thus, in the United States, public works under the Roosevelt administration were extended to include slum clearance and the construction of low-cost housing on a large scale. Such an extension of public works is obviously a matter of public policy and social conscience, dependent at any time on the degree to which, in an emergency, public opinion is prepared to see government invade territory normally occupied by private enterprise.[4]

How public works may serve as a stabilizer

The stabilizing possibilities of public works lie in the fact that the government in its various units normally exercises a large demand in the field of durable goods, and that this demand, to a very considerable degree, can be arranged in such a manner as to offset the instability of private expenditures. Not being subject to the profit-making commercial considerations that surround private business, government may postpone or advance its demands within wide limits; and this power enables it to stagger its operations in the field of durable goods against those of private enterprise. This possibility is particularly important because it is in the field of durable goods, such as are involved in public works, that the greatest fluctuations of output and employment occur and that the greatest social benefit can come from stabilization.

If government followed the habits of private consumers, including business consumption, it would enlarge its purchases when business is good and reduce them when business is bad. In so doing, it would tend to increase the expansion of industrial activity in boom and increase its decline in depression. Moreover, this practice is more or less what it is actuated to follow under its ordinary impulses, for, when times are good, not only do taxes flow in more freely and revenues rise, but the demand for government

[4] Cf. the list of projects given by A. H. Hansen, "The Post War Economy," in S. E. Harris, *Post War Economic Problems* (New York: McGraw-Hill Book Company, Inc., 1943), Chapter 1.

works of all kinds—on roads, bridges, canals, docks, post offices, and so on—rises also. On the contrary, in depression, revenues gradually shrink, ordinary demand for public works falls away, and economy becomes the watchword for all governmental units. In short, government tends to be inflationary in times when inflation is already under way, and deflationary when deflation is already dangerous.

It would seem, therefore, that, if government would revise its practices and deliberately arrange its expenditures to counteract rather than exaggerate the fluctuations of business spending, increasing its activity when business is dull and decreasing when business is active, the aggregate of business activity in general should certainly be more stable than it now is.

Society as a whole might, therefore, be made to avoid periods of feverish and unhealthy activity. If depression comes, a means is at hand for utilizing the human and material resources of the community that otherwise will be idle and useless. The use of these resources is then almost costless to the community, and their output is nearly a free gift to society, for the resources are already there. They cost nothing to produce, and even their use costs but little. They have to be supported even in idleness—not only men, who cannot be allowed to starve, but also machinery, which must be kept from deterioration. In idleness, the expenditures on their support bring no material result to society. At work, society has works of public usefulness in return for its expenditures.

The effectiveness of this stabilizing agent depends on its importance in the economic system as a whole, and this in turn depends on the volume of public works as compared with comparable private expenditures and on the fraction of this volume that can be brought under effective control.

The total volume of public works in the United States in the past has been considerably smaller than the volume of private construction. In the decade of the 1920's, public construction averaged 22 per cent of the total. But in the depressed decade of the 1930's, public construction rose to 46 per cent of the total. This change was partly because of the shrinkage of private construction, partly because of the extension of the scope of public works designed to relieve the great volume of unemployment.

If we grant the probability that such an extension of the scope

of public works will be favored by public opinion in any depression, it would seem that the total expenditures involved are of such a size as to enable government to exercise significant stabilizing power, provided it can bring these expenditures under control. One could be even more confident of this conclusion if postwar public opinion were favorable to a comprehensive program of development of the resources and productive power of the United States through urban low-cost housing, interregional highways, river valley development, air transportation facilities, and so on.

On the basis of a gross national product of 180–200 billion dollars (at 1944 prices) A. H. Hansen estimates that the postwar needs for public construction, including adequate provision for schools, hospitals, low-cost housing, urban redevelopment, regional resource development, together with highways and bridges would amount to 7–8 billions out of a total construction of some 18 billions. This would be 40 per cent of the total.[5]

Can the volume of public works be controlled?

In the United States, the degree of this control is affected primarily by two considerations:

1. The first is the proportion of federal as compared with state and local expenditures. Up to 1929 the total expenditure for public works was heavily weighted by state and local expenditures, which averaged ten times as much as federal expenditures. But the proportions have changed with the growing importance of federal works, as is shown by the expenditures in millions of dollars for the years 1929, 1934, and 1938 respectively.

PUBLIC CONSTRUCTION AND MAINTENANCE EXPENDITURES

	1929	*1934*	*1938*
Federal, including aid to local units	357	1266	2099
State and local	2952	1208	1612

Source: Department of Commerce

These changed proportions considerably increase the power of control over public expenditures as a whole, for only federal expenditures are reasonably flexible and readily controlled. They are under one authority, not several. Experience shows the utmost difficulty of increasing in step and in some coördinated plan

[5] A. H. Hansen, *Economic Policy and Full Employment* (New York: McGraw-Hill Book Company, Inc., 1947), pp. 191–192.

the public expenditures of the vast number of local jurisdictions. Federal authority, too, enjoys continued credit even in depressions, where state and local authorities, particularly local, find credit sadly reduced, if not completely gone, as depression proceeds.

It may be possible by federal grants-in-aid to bring about reasonable coördination of the many local expenditures both among themselves and with the federal government. Indeed this is almost essential, if state and local policies are not to aggravate cyclical swings and seriously offset the fiscal anticyclical measures of the government. For state and local authorities still tend to swing with the cycle, borrowing money in prosperity, paying off loans in depression, and a substantial change in their fiscal policies is much to be desired.

2. The second consideration is the extent to which expenditures, whether federal or nonfederal, can be shifted without raising problems greater than those to be solved.

Even though government is not moved by profit-making motives, it may, for other reasons, be prevented from manipulating expenditures to the degree demanded by a policy of stabilization. Army and navy expenditures cannot be dictated by these considerations. A government cannot foresee its future need for armament or afford to store up what may become obsolete types; and when need arises, it cannot delay. When war comes, stability of industry must become a secondary consideration. Education suffers from similar limitations; schools will be required as need arises, not merely because of depressions. There might be greater flexibility in the building of, say, post offices, but political motives may require at least some building for votes at times when votes are needed, and votes are as much needed in prosperity as in depression. On the other hand, public convenience would be but little affected, in the case of many services, were these varied within a year or so to meet the conditions of stability. Here the cost of changing the time of public works is relatively small. Probably this applies to roads, canals, and harbors. Certainly it applies to long range public works such as power development, or forestation, or the development of recreational facilities such as parks, game preserves, and so on.

How much of the normal public works program can safely be left to manipulation no one can say. Much depends on the state

of public opinion and on the composition of the public works program as a whole. It would probably be safe to estimate that not more than one-half the normal program of public works can be shifted from one period of the cycle to another. That is, public works could be increased from 50 per cent of its normal volume in good years to 150 per cent thereof in bad years, trebling the minimum rate at which public works would be carried on in prosperity. Somewhat less optimistically, a report of the Public Works Construction Advisory Committee in 1945 estimated that the volume of federal public works during a depression might be double that carried on in prosperity.[6] J. M. Clark estimates that even a 50 per cent shift in the 1930's would have expanded employment directly and indirectly in bad years by no more than some 2¾ millions of workers.[7] This would have greatly aided in stabilizing the construction industry, but it would not have been adequate to meet the extraordinary needs of the great depression, with perhaps 12 million unemployed. And it would be wise therefore to plan not only for a reserve of public works through appropriate shifting, but also for some additional projects designed to take care of unexpected needs.

Planning public works

Unlike monetary control, the use of public works involves an elaborate planning machinery. Monetary control is essentially a simple mechanism. It requires extensive statistical and economic data and analysis thereof, but beyond this the administrative mechanism is simple. In fact, most of the statistical knowledge would be gathered, in any case, as a necessary incident of the ordinary operations of central banking, irrespective of business cycle control. The administrative mechanism is of the simplest type—at the most, the organization of an effective board for the conduct of open-market operations.

But a program of public works is a much more formidable affair. There must be an engineering commission with appropriate plans and specifications. There must be all the administrative facilities for expanding and accelerating a program of construction when need comes. There must be some mechanism for taking care of financial reserves.

[6] A. H. Hansen, *Economic Policy and Full Employment*, p. 193, Note 9.
[7] J. M. Clark, *Economics of Planned Public Works*, p. 62.

Any public works program involves a careful planning of finance, engineering, and contracting. And if the program is to be effective not only at the federal, but also at the state and local levels, it must be made to fit into the traditional procedure for public improvements, and the administrative habits of hundreds of governmental units throughout the country.

Public officials, especially in local units, are concerned with the routine of the job and with the placating of the electorate, not with stabilizing theories. They think in terms of meeting local demands when they arise or are insistent. They are concerned with the possibility of selling local bond issues, which are not particularly adaptable to cyclical regularization.

Furthermore, considerations of caution against reckless expenditure have created an administrative machinery for public works that is extremely complicated. For example, take the ordinary practice of local governments.[8] A project is initiated by popular petition. Plans and specifications are then prepared and presented to the proper legislative body. Assessment boundaries are fixed, and assessment maps are prepared. Assessment notices are then served, and a month is allowed to property holders to protest. Often appeal is made to courts, and two or three years' delay intervenes.

Whatever the jurisdiction, public works necessitate determining the legality of loans, preparing plans and specifications, acquiring the property, raising the funds from the public, bidding and selection of contractors, and all the routine of legislative action.

These delays are formidable for all local projects. How formidable can be seen from the experience of PWA delays in the early years of the New Deal.[9]

Federal projects do not suffer from such a complication of delay, and the increasing proportion of federal projects will, of course, reduce the average delay for public works as a whole. Even local delay could be avoided were some kind of long-time planning set up which would enable plans and specifications to be ready when need arose. Planning would be most likely to be available for works of broad popular use, forestation, parks, conservation, roads,

[8] L. Wolman, *Planning and Control of Public Works* (New York: National Bureau of Economic Research, 1930), p. 165.

[9] See P. H. Douglas, *Controlling Depressions* (New York: W. W. Norton & Company, Inc., 1935), pp. 127–128.

and so forth, rather than for those for which local demand is a prerequisite, such as schools, sewers, and public buildings. We always want conservation projects. Local projects are not so easy to foresee.

The efficacy of public works for stabilization can probably be increased in those areas where a long-time regional plan has been worked out under the efforts of engineers and public administrators eager to avoid the disbenefits of haphazard development. Regional planning, where it is in force, reduces delay in utilization of projects. A set of carefully considered projects, already investigated, is an enormous advantage in depression, where delay is costly. The PWA laboriously, but of necessity, passed on many projects, often worthless, with much loss of time. Regional planning speeds this up. Areas where regional planning was in operation, as in Cincinnati, made a much better record than others in submitting sound projects for approval.

Furthermore, regional planning helps to maintain continuous interest in public works projects, and thereby overcome the ease with which depressions are forgotten when prosperity returns. People may become accustomed to long-term thinking, and so avoid the futility of spasmodic efforts when what is wanted is to keep the problem alive at all times.

It is true that regional planning tends to work on fairly uniform schedules with relatively stable year-to-year expenditures, and that this might conflict with the demands of cyclical stabilization. But the disruptive effects of depression in long-time plans are so considerable that it might not be difficult to persuade the regional planners to modify their timing (and, possibly, their financial policies) with a view to reducing cyclical swings. Business stability might make long-time plans more likely to work out. Since costs are high in prosperity and low in depression, the projects as a whole might be substantially cheaper.

Public works reserves

Effective planning of public works expenditures, therefore, requires a backlog of projects to be put into action upon the arrival of depression. In order to make this action effective, the following procedure should be set in motion:[10]

[10] See Seventh Report of the House Special Committee on Post-war Economic Policy and Planning. 79th Congress, First Session, House Report No. 852.

1. An appropriate agency should be set up by the Federal Government to coördinate the plans of all departments involved in construction projects, and to establish coöperation with state and local representatives.

2. This agency should set up a "shelf" of public works, to consist of programs of all jurisdictions scheduled over a period of (say) six years, together with a "reserve" of additional projects to take care of unexpected needs. These projects should be planned to be available on short notice (at least in part), and plans and specifications should be continuously kept up to date.

3. A procedure should be worked out whereby, as far as is feasible, these programs could be "telescoped" or concentrated in relatively short periods to provide employment when needed.

4. The Federal Government should be prepared to make advances to state and local bodies to enable them to meet the expense of planning their share of the "shelf," since legal restrictions frequently bar local jurisdictions from financing the planning of public works projects in advance of formal approval for construction. A House Special Committee on Post-war Economic Policy and Planning in 1945 recommended that the Federal Government make funds available to state and local jurisdictions sufficient to build up a backlog of five billion dollars' worth of construction projects.

5. It would be wise for the agency to advise with the construction industry (both management and labor) on means of maintaining stable progress in employment and production in this industry.

Procedures of this sort were embodied in the Construction Stabilization Bill introduced into Congress in October 1945. Their adoption would largely serve to overcome the formidable delays that have in the past impeded the effectiveness of public expenditures.

When should the reserve of public works be started? The stabilizing efficacy of public works depends not only upon the volume available but also upon their being used at the proper time. Improper timing may cause even an adequate program to do more harm than good. Proper timing will greatly enhance the effectiveness of what otherwise might seem very modest efforts. But

opinion as to the best time to launch public works is by no means unanimous.

One would suppose that the reserve of public works should be put into action as soon as recession is definitely established. The argument is that a relatively small amount of expenditure thrown in promptly at a strategic time will check a depression before its cumulative deflationary effects get momentum. It is these cumulative effects that make depressions serious, and if they could be averted, business might recover its equilibrium before great damage was done.

There are several objections to this view: the difficulty of spotting a genuine recession until after it is well under way; the inevitable delay in launching public works under the best of circumstances; the possibility that only a prolonged expenditure by the public, and not merely a prompt but small outburst of spending, is needed to restore activity to predepression levels, for, if cyclical depressions are the result of overexpansion of productive equipment by private industry, a severe shrinkage of private expenditures for capital purposes may be unavoidable.

Some economists hold that expansion of public works should be timed to take place when depression has reached the bottom, when industry is in a trough, and when the stimulus of public spending may be the one thing needed to speed recovery. This view is based on the theory that depression and its cumulative effects are the inevitable consequences of the previous boom. They are the necessary readjustments imposed on industry by the distorted price and cost structure built up in prosperity. As long as these adjustments are not made, recovery cannot come. They can be postponed, it is true, but they cannot be avoided. Until they are made, business will stagnate or move in a quite artificial activity.

Now public works, it is argued, if improperly timed, may prevent these adjustments from being made. Introduced too early, they keep up prices of materials and wages when they are on the way down and when they should continue downward if business is to be once more on a profitable basis. The proper time to begin public works is when the readjustments have been worked out as far as they will go—that is to say, at the end of the cumulative decline called "depression." Then public works may become a

stimulus to an exhausted patient and be of positive help in lifting it once more into recovery.[11]

Proper timing an unsettled problem. There seems no adequate reason to prefer this latter view. Doubtless, readjustments have to take place, but severe deflation is most dangerous and might be prevented by earlier use of public works. Readjustments are never completed, nor is there adequate evidence to indicate how much readjustment should have gone on before public works are started. Possibly, when prices cease to fall or fluctuate within a narrow area for some time, one may assume practicable readjustments to be over. But even then, wages and other costs may still be going down.

Moreover, the end of a depression is partly a psychological matter. Adjustments are over when the business community thinks they are over. If businessmen think wages will continue to fall, they may postpone expansion still longer, and their expectations are affected by the public works policy of government. If this policy is averse to early starting of projects, lest wages be pegged too high, it may be a factor in making business postpone commitments until wages fall. If, on the contrary, it is likely to start works early, business may become resigned to existing wage levels and be willing to expand more quickly.

Cautious waiting for the precise time for placing public works may, indeed, so delay the onset of these projects that depression may be over and recovery on the way by the time the peak of activity in public works has arrived. Public works, even when plans are ready, have the slow development characteristic of all capital projects. They are time-consuming processes and may well overrun the depression into recovery itself. If this delay occurs, it may not be easy to avoid making it more costly for business ventures to proceed and more difficult to restore normal activity when public works are withdrawn. The case for public works is definitely weakened if they cannot be carried on in depression without overlapping into periods of revival and boom.

For these reasons, it is not wise to assume that interrupting or shortening the rigors of depression is impracticable.

[11] For two views on this problem of time see P. A. Samuelson, "Theory of Pump Priming Re-examined," *American Economic Review,* September 1940; and E. C. Bratt, "Timing Pump Priming Expenditures," *American Economic Review,* March 1941. The former favors early, the latter delayed action.

In practice, however, only experience will locate the best time for launching public works and determine the best speed at which, once launched, they should be carried on. Until these facts are determined, and their determination requires economic indexes not yet available, other considerations will doubtless be paramount. These considerations are of such a nature—public pressure, the demand to get something done, unrest among farmers or workers—that public policy is more likely to move in the direction of early, rather than delayed, decision in putting projects into action.

Under these circumstances, there is something to be said for setting up some kind of automatic signal as a means of timing. Thus a reserve of public works might be set going whenever the volume of all construction contracts in any three months period fell by 10 per cent below the average of the same three months in the preceding three years; or alternatively if unemployment has reached a total of (say) four millions in three successive months.

Placing public works

Public works not only need to be properly timed but also need to be properly placed. Clearly, if public works are to be most effective, they should be expanded most in areas where unemployment is greatest. Thereby they will relieve the most distress and be least likely to interfere with any possible private expansion. But this placing is not easy to accomplish. The volume of unemployment is heavily concentrated in the industrial areas. In eleven industrial states in the north central and northeastern areas of the United States will be found a very large fraction of the unemployed. To concentrate public works in these areas in volume comparable to the unemployment is both economically and politically difficult—economically, because the marginal utility of projects in these areas may fall quite low; politically, because the people of other states expect some tangible compensation in their own areas for the present and future burden of taxation that they will surely be called upon to bear.

The problem could be solved if labor were much more mobile —able to change not only place but occupation at call. But the great distances involved, the unwillingness to sacrifice home ties, and the uncertainty of changing circumstances make territorial

change not easy. Although occupational change is not difficult for unskilled, it is not always feasible to make construction workers out of other specialized labor. Unemployment among textile workers, for instance, cannot be solved easily except by the simplest kind of alternative occupations.

When the difficulties involved in this transfer become so considerable as to interfere with the adequate success of a public works program (which may happen in any major depression, as it undoubtedly did in the depression of the 1930's), the authorities are moved either to adopt projects calling for such unspecialized ability that all labor may readily take part, or else to create work for specialized and trained workers in the field of their normal employment. Both of these alternatives may involve some trouble for the authorities. The first will extend the scope of public works into projects of diminishing usefulness, from such work as roads, bridges, and public buildings, into the creation or beautification of parks, forestation or clearing work, and other projects of remote future utility. The second will tend to encroach on the field of private enterprise, as, for example, in the theatrical, musical, and other "white collar" projects of the WPA. Opposition will certainly arise against both of these developments: against the first as a waste of public money; against the second also as a waste of public money ("boondoggling" is the word applied thereto), but more because of its competition with private business. For these reasons, immobility of labor has far-reaching effects, reducing the efficacy of public works no matter how they are arranged to solve the problem.

If political considerations could be neglected it would be economically wise to base the geographical distribution of public works upon the economic trends of the time. Public works in decaying areas should be avoided lest workers be frozen in localities of poor long-time prospects. Heavy concentration of public works in expanding communities would serve to encourage emigration to areas where productivity is high.[12]

Fiscal problem of public works

The fiscal problem of public works is that of financing the expansion of government outlays during depressions. This prob-

[12] Cf. Benjamin Higgins, "Problems in Planning Public Works," in S. E. Harris, *Post War Economic Problems,* Chapter XI.

lem can be handled in either one of two ways: (1) by collecting reserves from taxation during good times, to be spent on public works in bad; or (2) by borrowing the necessary funds for public works in depression and paying off the loans from taxation during prosperity.

On the face of it, these two methods are essentially the same, since both mean raising funds in good times by taxation in order to have funds in bad times for public outlays. It would seem to be a question of administrative detail whether the taxation should precede or follow the expenditures involved.

But the question is more complicated than this. The two methods involve substantial differences in practical results, which have now to be examined.

1. *Reserves.* The use of reserves seems to be a businesslike method of handling the problem. Taxes are relatively easy to raise in good times; surpluses are likely to emerge, and it seems wise to raise funds in these circumstances. Moreover, the funds, once collected, seem to remove any uncertainty as to the amount available, such as is likely to attend reliance on borrowing. It may be possible to postpone public works in a physical sense, so that what is not done now is available for the future, but the financial arrangements involved may not be postponed so easily. Merely to refrain from borrowing in prosperity does not necessarily create a reserve of borrowing available in depression. Depressions have a way of affecting borrowing power adversely. They bring about decided differences in security, and there is no guarantee that capacity to borrow will remain intact. Security may fall in depressions, for governments as well as for other money-raising bodies. Ability to borrow in depression cannot be relied on merely because a reserve of borrowing was left from prosperity. Especially is this true of state and local governments.

Hence there is, at least in theory, something very attractive about a reserve of actual funds. There they are, and there is no question about them; and, when emergency arises, they can be used immediately.

Reserves not so good as they look. There are, however, serious difficulties in the use of reserves, which may make them much less suitable to the problem in hand than it would seem at first glance.

1. In the first place, reserve funds are easily raided for increased expenditures by public officials seeking popular approval. Al-

though this danger may be avoided in federal administration, it is one that is never far removed in state and local finance.

2. Secondly, if there is objection to keeping reserves in idle cash, the problem of investment of the funds and their realization when needed is a serious one. This problem is more specifically dealt with in considering unemployment insurance and other devices for equalizing and stabilizing consumer income.[13] Here it is enough to point out that it is a formidable problem to find suitable investments for the funds, and particularly to liquidate these investments without demoralizing the investment market at a time when its ability to absorb securities is reduced to a low ebb.

3. These two difficulties, however, are obviously administrative and should lend themselves to a workable solution. The third, which is more serious, is that the amount of reserves which could be reasonably laid aside, public and business opinion being taken into account, may be far short of the necessities of anything save a minor depression.

If no special taxes are levied for the purpose of reserves in good times (unemployment insurance levies are of this sort, but they lead to special funds that are not usable for public works), then the best method would be to set aside all tax yields that rise above, say, a five-year average to be used in years when yields fall below the average. What would be the result of this in practice? Clark points out that, had such a formula been used for federal revenues from 1925 to 1934, the result would have been the accumulation of 246 millions during the years 1925–1930, and the withdrawal of 198 millions for expenditures in the years 1931–1934.[14] These are not sums that would do much toward meeting the problems of a major depression.

There may be times when, by good fortune, substantial reserves can be built up. The end of the late war found most of the states with large surpluses from wartime revenues that they could not use for public works during the war. Many cities had increased surpluses, though some were in distress because of the building of emergency facilities for wartime population growth. If these surpluses are kept intact for use in the event of recession, the country would be in a more than usually favorable condition

[13] See Chapter 23.

[14] Clark, *Economics of Planning Public Works*, p. 116.

to demonstrate the effectiveness of stabilization reserves. But as a rule the exigencies of a public works program in any save minor depressions (and minor depressions might even be left to take care of themselves) are such as to make reliance on reserves bring disappointing results, and to make depression borrowing the more effective policy.

2. *Depression borrowing.* The creation of a deficit in depression to be written off in recovery involves problems of both borrowing and repayment. These problems will now be examined.

In order to be effective, a policy of depression borrowing may have to overcome certain obstacles that arise, partly from traditional attitudes toward government deficits and partly from the credit difficulties that are likely to surround state and local bodies even though the federal government may be free thereof.

The problem of balancing the budget. (a) First, there is the tradition of a balanced budget, which creates hostility to the more than seasonal deficits that a stabilization policy is bound to bring about.

A balanced budget is an important protection against the constant and insidious danger of a progressive increase in the public debt. It forces governmental bodies to live within their income, and adopts a policy of pay-as-you-go. Doubtless, budgets should be balanced. What is in dispute is the proper period over which budgets should be balanced. The traditional period is, of course, the calendar year. It is within this period that the public expects revenues should equal expenditures. But there seems no compelling reason why pay-as-you-go must be interpreted to fit into the fixed framework of the calendar year. There is no overwhelming merit except usage in 12 months as compared with 6, or 18, or 24. The calendar year is a conventional period, doubtless adopted because it fitted the traditional processes of agriculture when agriculture (and other seasonal vocations) dominated activities. But other periods are quite as rational and probably better suited to industrial conditions. Business itself, in its own financial practices, by no means follows the budget balancing it commonly demands of government. Corporations lay aside reserves for bad times, and throughout depression continue to pay not only dividends but salaries and wages in excess of current revenues. In-

deed, they regarded their doing this in the depression of the 1930's as a particular claim on public commendation. Essentially, what they are approaching is a period for budget balancing coincident with the business cycle. Just as the seasonal fluctuations of business and of revenues average out in the calendar year, and justify thereby deficits in one part, surplus in another, of this period, so cyclical fluctuations average out, and equally justify deficits in one phase if they are counterbalanced by surpluses in another. A cycle seems to be just as rational a period for budget balancing as the more commonly recognized year. Let us adopt pay-as-you-go by all means, but during a cycle of business, not a year of seasons.

Indeed, it may be said that, in actual practice, governmental bodies fail to live up to their pay-as-you-go intentions in any but the most normal periods. Any emergency will wreck the policy and make some compromise necessary. Furthermore, public opinion tacitly accepts the compromise. Thus tax-anticipation warrants, the running up of bills, transfer from one fund to another, and other short-time expedients of state and local finance, although designed to be cleared up currently within conventional budget periods, never get cleared up in this way, but in emergencies fall into continuous renewals and thus become, without formal recognition, a kind of cyclical deficit financing acceptable to public opinion. Possibly a more appropriate attitude would see the problem straight and approve regular funded loans.

It is true that the great virtue of yearly budgets is the certainty of the period, for the use of longer periods than the fiscal year introduces an unpleasing vagueness as to the length of time within which balance is to be attained. Cycles, as has been pointed out elsewhere, are not periods. They do not have regular time intervals, and we must regard this aspect as a serious disadvantage. Nobody can foresee how long a depression is going to be, save that the depressions in which borrowing is most needed are usually not only severe but long. This uncertainty is a serious matter for the balancing of a budget, for all deficits are, in theory, to be cleared away in revival. But long depressions may not be followed by revivals great enough to balance budgets out. Indeed, there is some evidence that prosperities following major depressions are

shorter than average.[15] Revival in such times starts from very low levels, and even considerable recovery may not mean a great enrichment of the nation; and when one adds to this the further difficulty that repayments of large deficits may be a distinct drag on recovery, there seems to be good reason for the fear lest cycle budget balancing may turn out to be, in the long run, an insidious process of a gradually increasing debt.

The usual compromise and its disadvantages. The public willingness to accept compromise, however, may indicate that its attitude toward yearly budget balancing is a matter of convention rather than conviction, and could be broken down in favor of cyclical balancing were good reasons for the change to be advanced. If so, then a new convention would be adopted, and it would be regarded as correct for government to run on deficits during depression, surpluses during prosperity, provided that, over the cycle as a whole, the excess of good times pays off the deficits of bad. Unfortunately, public opinion is likely to lag behind the necessities of the situation and, for a time at least, to force upon government certain illogical compromises such as marked the depression of the 1930's.

One of these compromises was the double budget set up by the Roosevelt administration: the first or ordinary budget, which was to be "balanced," and the second or extraordinary budget, the expenditures of which were to be met by borrowing. The balanced budget maintained intact the "correct" attitude toward the fiscal year; the unbalanced budget was "abnormal."

This concession to public opinion, however, is bound to lead to absurdities whenever the limitations of tax receipts force the abandonment of relatively important services which happen to fall in the "regular" activities of government, while relatively unimportant services that can be included in the extraordinary budget are being expanded. The most glaring example of this is the experience of the school systems in the great depression. School budgets are of the group that is supposed to be balanced in the calendar year. If receipts fall off, then salaries must be reduced or, at the worst, schools closed early, or entirely. This calamity

[15] See E. C. Bratt, *Business Cycles and Forecasting*, 3rd Edition (Chicago: Richard D. Irwin, Inc., 1948).

may happen at a time when, through deficit financing, the government is building roads and sewers, or making parks, or cleaning streets—admirable things in their way, but no substitute for the fundamental services of education. It would seem wiser to forego the public works, which, after all, if not built now can be built later, and use the borrowed funds to maintain services such as education or health, which, once foregone, can never really be made up. Yet this policy cannot be followed under orthodox canons of fiscal practice which make it possible to borrow for permanent works but not for current services.

So obvious is the objection to the kind of compromise we are apt to get in depression that services cut off from ordinary departmental budgets had, during depression, to be put back through the agencies of the WPA. Especially was this true of education. School teachers released from regular services were re-employed by government agencies in adult education projects, or other educational activities of the WPA. In some instances, artists have been employed painting murals on the walls of schools, where inability to raise school funds had already reduced the schedules of classes. Doubtless, adults need education, and schools may be brighter for murals, but it would seem that these are no exchange for the ordinary services of teaching the children of the community. Yet this arrangement is what we get under the compromises that lagging public opinion forces upon fiscal practice. Perhaps, in other depressions, public opinion may have been educated out of these arbitrary distinctions between budgets which may and budgets which may not be balanced. Until they are, it may be necessary to hold with Clark[16] for "actual evasion of the principle of the divided budget," by using public works or relief funds to maintain regular services which have been reduced or omitted under the urge to balance the "regular" budget. The thing to do is to spend money where it will do most good, without worrying about artificial fiscal categories in respect to deficits.

Limitations on government credit in depression. (b) A second difficulty in the way of borrowing in depression is found in the credit standing of governmental units. Even though public opinion, especially business opinion, has been educated to government

[16] *Economics of Planning Public Works,* p. 107.

debt-creation in depression, this is no guarantee, in itself, that debts can be easily or quickly expanded. There are various limits on the debt capacity, particularly of state and local bodies, that put up formidable barriers to such expansion.

Federal credit would seem, from the experience of the recent severe depression, to be free from serious direct limitations. But state and local credit is another matter. The fiscal difficulties of states and cities in depressions are notorious. Part of the difficulty comes from taxes that too readily reflect the cycle of business and fall away too much when business goes into major depressions. State tax systems are likely to be built up on too narrow a basis, and prove, for this reason, too sensitive to business fluctuations. This characteristic seems true of net income taxes, unless they are based, not on a single year's income, but on the average of several years so as to include a complete business cycle. Even property taxes, still the foundation of many state revenue systems, and long regarded as maintaining stable revenues in periods of less than normal business, have proved to be unreliable as revenue producers in a severe depression. Moreover, this sensitiveness to depression is reflected not merely in a reduction of estimated yields, but perhaps even more startlingly in a great increase in the volume of tax delinquency, which is reported by Clark to amount to an average of 20 per cent for a group of 17 states. Nor can this delinquency be effectively checked. There is great difficulty either in enforcing penalties or in realizing on property taken over for taxes. Indeed, this delinquency is a thinly disguised (and unscientific) method of tax reduction. Furthermore, in depression, tax receipts are extremely elastic, so that raising the tax rate or even extending the tax base may turn out to be only a means of increasing delinquency, and not an important and effective device for enlarging fiscal receipts.

This tax difficulty in itself weakens the credit status of government units. But apart from this, borrowing is still further impeded. Many fiscal units enter a depression in poor financial condition. Unless a regular program of long-time financing has been set up to replace the more or less opportunistic arrangements of state and local bodies, credit may have already been endangered by unwise or excessive borrowing in good times, when political ambition finds easy expression in expanded local activities. Thus

several states and one of our largest cities entered the depression in 1929 on the verge of bankruptcy.

Even states or local bodies with reasonable credit standing may be stopped from borrowing by statutory limits on debt expansion. In some instances, these limits have the additional inflexibility of being written into the Constitution. Originally designed for preventing wild-cat construction schemes by local public bodies, these limitations doubtless had (and still have) their justification, but they certainly were never set up with any realization of the necessities of fiscal policy during booms and depressions, and they put severe restrictions on the success of stabilization programs—so much so that the State of Washington, for example, had to invoke the insurrection clause of its Constitution in order to enable it to borrow funds for relief works. This way of doing things seems unnecessarily hard.

State and local credit need fortifying. The result of this situation is that, although federal borrowing can be readily expanded, it is not easy either to expand the very important body of local public expenditure or (what is more important, perhaps) to work out a reasonably coordinated system of public works by federal, state, and local bodies. Hence state and local expenditures may decline while federal expenditures are expanding. This actually happened in the depression of 1929–1933, as shown by the following figures of federal and state and local public construction:

(millions of dollars)

	1929	*1934*
Federal	357	1266
State and local	3363	1208

If excessive reliance on federal debt creation is to be avoided, it will be necessary to fortify the credit of state and local governments. This task could be accomplished by various means. (1) Debt limits should be made more flexible either by constitutional change or by modification of existing laws. (2) More intelligent avoidance of debt creation in prosperity might be achieved. To this end it might be advisable to discourage the issue of tax-exempt securities which too easily facilitate expansion. (3) Try to get more stable tax systems. Great reliance on the general property tax is probably a source of instability. Single taxes, like single crops, may have to give way to a more diversified structure. (4)

Give federal aid by grants and loans to assist state and local projects in depression. This aid reduces the cost of borrowing and is equivalent to raising the credit rating of the local units. It enables the federal government, in return for such aid, to enforce general standards throughout all jurisdictions and to bring about the all-important coördination of federal and nonfederal projects.[17]

Repayment

The theory of public works as a stabilizer assumes that loans contracted in depression will be repaid in the following period of recovery and prosperity. Only thus will the public credit be maintained and the margin of credit capacity for the next depression be restored. This assumption does not imply that the aggregate of public loans should, on the average, remain constant, but only that the long-time rate of expansion of loans be not arbitrarily increased by unpaid deficits accumulating from depression periods. The aggregate of public loans will clearly increase, both with the general wealth of the country and with any underlying tendency to increase public economic functions relatively to private. Stabilization finance will merely cause the aggregate of loans to fluctuate about this rising trend as the community goes through expansions and contractions of general economic activity.

The source of repayment is, of course, in a general sense taxation. But it may be convenient to distinguish two sources of revenue from which depression expenditures can be recovered. (1) The first are specific revenues from so-called self-liquidating projects. This category includes not only prices, as for the use of museums or baths or stadia, and so on, but also special assessments, as for sewers, and specific taxes such as gasoline taxes, and other levies (license fees, and so forth) that are used to pay for public roads, and all interest and amortization payments, such as for home and farm mortgages. (2) The second is general revenues from any kind of taxes to repay all other advances and expenditures. These may require special taxes or special increases of rates or rate bases,

[17] For a thorough discussion of the problem of making state and local finance effective for stabilization see H. S. Perloff, "Fiscal Policy at the State and Local Levels," in S. E. Harris, *Post War Economic Problems,* Chapter XIII. See also Mitchell, Litterer, and Domar, *"State and Local Finance,"* in *Post War Economic Studies,* No. 3, Board of Governors of the Federal Reserve System.

or they may come without such special changes from the increased earning power and revenue-producing power of the community in good times. Such revenues are not thought of as arising from self-liquidating projects, but the term "self-liquidating" is not precise, and only convention gives it its present rather narrow meaning. Further experience with cyclical fiscal policy, and particularly more insight into the possible gains from investment in human resources as compared with physical resources like roads and sewers, may substantially broaden the concept of self-liquidation. In any case, if public expenditures actually stimulate revival, as is claimed, they are all self-liquidating in the broad sense of the term.

To fulfill the requirements of cyclical policy, depression loans should have short periods of amortization—say five years on the average. But this arrangement is not always possible, partly because of the burden on industry during the period of recovery and partly because in some of the projects often advanced as a particularly desirable medium for public works, such as lowcost housing, short periods of amortization cannot very well be utilized. On the assumption that major depressions do not come too frequently, and further that the deficit expenditures of government are really conducive to recovery (a problem in itself to be examined in the following chapter), it would seem possible to clear off the burden of excess debt during periods of prosperity. Thus the prosperity of the 1920's so greatly increased the revenues of the federal government that even the high levels of its outlays (a legacy of war and postwar depression) did not prevent a substantial surplus from arising and being used to retire the public debt. Had it resolutely set itself to do so, and imposed appropriate taxation to this end (especially taxes on large incomes), it could have increased greatly the speed and volume of repayment.

How to prevent repayment making trouble

The repayment of public works loans for other than self-liquidating projects raises nice questions of fiscal practice. If the taxes for this purpose are collected from a wide base and paid to the banks, institutions, and wealthy individuals who would usually hold the bonds, the effect is to shift purchasing power from the spending to the saving classes. This may, if not guarded against,

lead to untoward consequences. If the debt receipts are invested, it may lead to an unhealthy capital expansion of the sort Hobson visualizes. If, on the other hand, they are allowed to remain relatively idle, then a deflationary drag on the economy is set in motion, and recovery to full prosperity may be hindered.

The government could theoretically avoid these shifts of incomes by so weighting its tax system in the recovery that taxes rest relatively heavily on large incomes, inheritances, and corporate surpluses, and relatively lightly on lower incomes.

If these fiscal policies were not feasible, then the government should fall back on the monetary controls residing in the Federal Reserve System. If in expanding public works the government borrowed exclusively from the Federal Reserve Banks, the repayments, adding as they would only to the funds of the Federal Reserve Banks and not to those of private investors, would seem to be subject to appropriate control. The Federal Reserve Banks could withhold them from or through open-market operations add them to circulation as they saw fit. If, as would be more likely, the government has sold its bonds not only to the Federal Reserve System but to the generality of banks, private investors, and institutions, then repayment puts at least some of the funds in the possession of those who are not necessarily interested in, or capable of, restraining or encouraging investment. Under these circumstances, the problem reverts back to the effectiveness of the monetary controls of the Federal Reserve System, a subject that has been treated at length in previous chapters. In any case the problems involved in the great size of the postwar public debt now completely overshadow these cyclical matters.

22

ECONOMIC PROBLEMS OF PUBLIC EXPENDITURES

WE HAVE EXAMINED in the previous chapter some of the administrative and technical problems of public works expenditures. Now we have to consider the economic aspects involved. More particularly, we must ask these questions: If the administrative difficulties are solved, if a sufficient fund of projects can be made available for attacking depression, and if the proper financial procedure has been set up, will the exploitation of these works actually tend to bring a depression to an end and serve to restore prosperity? Is the employment brought about by public works a real addition to employment? Is the purchasing power made available by public expenditures a net addition to purchasing power? Has the government succeeded in transferring employment and purchasing power from good to bad times and, by this degree, stabilized the total of employment and purchasing power over the period involved? In short, is the apparent economic effect the real economic effect, or are there hidden consequences which must be considered? These questions we shall now examine in detail.[1]

PUMP PRIMING AND COMPENSATORY SPENDING

It is customary to distinguish between two concepts of public expenditures, the pump-priming concept and the compensatory spending concept.

[1] For excellent discussions of these problems, see A. H. Hansen, *Fiscal Policy and Business Cycles* (New York: W. W. Norton & Co., Inc., 1941), Chapter XII; and B. H. Higgins and R. A. Musgrave, "Deficit Finance—the Case Examined," in *Public Policy*, Vol. II, pp. 136–207, Graduate School of Public Administration, Harvard University, 1941.

Pump priming signifies that a certain volume of public spending will serve to start up the economic machine, which thereafter will reach satisfactory levels of output on its own power. What this volume of spending may have to be is not known. All that can be said is that sooner or later the economic machine gets going at a proper pace. Pump priming would be appropriate to bridge a gap caused by slowness of cost-price adjustments, or to start off expenditures on replacement or innovations that need a spark of encouragement to get them going, or merely to overcome the pessimistic attitudes of entrepreneurs. The idea implies a relatively minor or temporary maladjustment to be overcome.

Compensatory spending on the other hand means that public spending is designed to compensate for the decline in private investment. There is no necessary implication that such spending will set the economic machine in order and start it functioning effectively again. All that is implied is that when private investment declines, public expenditure expands. As long as private investment is below normal, public compensatory spending would go on. If private investment were chronically deficient as is implied in the stagnation thesis, compensatory spending would go on indefinitely.

Thus compensatory spending is based on the Keynesian proposition that the national income can be maintained at any level so long as what people choose to save at such levels is offset by investment expenditures. The corollary of this proposition is that national income can be maintained provided any shrinkage in private investment expenditures is offset by public expenditures.

The leverage effect of expenditures

The effectiveness of public expenditures is best measured by the net increase in income or employment they bring about. The total effect of any given expenditures is not indicated by the immediate outlays involved. The increase in income or employment brought about by any given increase in expenditures is commonly greater, and in some circumstances considerably greater than the increase in expenditures.

There are various reasons for this important phenomenon.

The first is the operation of the multiplier principle, as the original increase of income passes on from one set of consumers to

another in an endless series. This principle, described in Chapter 16, on Keynes and his theories, indicates the total increase of income resulting from an increment of governmental (or other) expenditures. As we have seen in discussing Keynes' theories, the multiplier is usually higher than unity.

The second is the principle of acceleration of derived demand, described in Chapter 9. This principle, it will be recalled, indicates that an increase in consumption, such as that caused by public works expenditures, will, at a certain stage of expansion, cause a more than proportionate increase in investment. Following the usage made familiar by Harrod, this principle is sometimes called "the relation." [2]

In addition to the operation of these two principles, two other possible influences should be noted. The general improvement of expectations may encourage still further investment, and the release of people from fear may cause a certain amount of spending from accumulated funds (dishoarding). Higgins and Musgrave call these "induced investment" and "induced consumption." They in turn would add their further effects via the multiplier and the relation, and so on.

The total effect of any given government expenditure, therefore, is compounded from the multiplier, the relation, and induced investment and consumption. These taken together produce a total effect that, to use a phrase of Hansen's, we may call "leverage." The "leverage coefficient" is the measure of these effects.

The weightiest component of leverage is the multiplier effect, to the further consideration of which we now return.

Direct and indirect effects of public works

The total employment that may be brought about by public works expenditures may be considerably larger than appears on the surface. Such expenditures have cumulative consequences, which tend to make the increase in total employment a multiple of the original employment upon the projects themselves. This increase in employment is commonly classified into *primary employment* and *secondary employment.*[3] Primary employment is

[2] R. F. Harrod, *The Trade Cycle* (Oxford: Clarendon Press, 1936), Chapter II.

[3] See pp. 292–293, where investment increases are similarly classified in the discussion of the "multiplier."

the immediate outcome of the public works projects. Some of it is employment of workers on the project itself, which may be called "direct primary employment." Some is the employment in producing and delivering materials of all kinds for the work in question, and the performance of all associated services, which is "indirect primary employment." *Secondary employment* is the employment resulting from the expenditures of all those who receive their income from the outlays involved in both direct and indirect primary employment. To meet the increased expenditures from these incomes, which include not only wages, but interest, rents, and profits, production and employment are generally increased, particularly in consumers' goods industries. The incomes thus generated are spent, and so give rise to further activity and employment, and so on. This increase of employment in consumers' goods industries extends indefinitely as expenditure goes on from group to group, but it is convenient to group it all as secondary employment, which then covers all the further series of increases resulting from the original primary employment involved in the public works proper.

The numerical relations between these various series of employments are of fundamental importance, for they determine the practical effectiveness of a public works program not only in adding to total employment but in adding to employment where it is most needed.

As to the relation of direct and indirect primary employment, Clark hazards the guess that, under ordinary working conditions, the two are about equal, but that, under conditions of acute depression, the urge to minimize the use of machinery may reduce the ratio of indirect to direct employment to three fourths or two thirds.[4] In practice, the percentage seems to vary with the quality of work done. Investigations carried on by the PWA on work done from June 1933 to June 1936 indicate much higher ratios of indirect employment. Measured by man-hours of employment, work created in industries supplying building materials averaged

[4] Construction industry estimates in terms of on the site and off site employment (similar to direct and indirect employment) make them substantially equal, though the proportions vary from year to year. But the distribution is not easy to make. Off site employment may include only producing and delivering materials; or it may include producing the equipment as well, or even the materials for the equipment, and so on.

two and one-half times that done in the building trades constructing the projects.[5] If an average expenditure of $3,000 per year per man (Clark's estimate) is assumed, this outlay would mean approximately $850 for direct employment and $2,150 for materials of construction. Nearer to Clark's ratios are the WPA projects begun in 1935, on which it was expected to spend $100 per month per person, of which $50 was to be in wages and $50 in materials. At the other extreme are the relief projects of the leaf-raking variety on which, in the year ending April 1934, the expenditure averaged $630 per man-year. The way in which this work was done and the low total of expenditures indicate that most of this must have been paid in wages, and that the fraction of indirect primary employment must have been uncommonly low.

Relief work versus public works in creating employment

These varying ratios of direct and indirect employment must occasion some variation in the effects of public works upon further industrial activity. Where there is practically no indirect primary employment at all, as in straight relief work, the entire stimulus must arise from the secondary consequences of expenditures by relief workers, consequences which in the first instance would be felt exclusively by a few consumption industries catering to the elementary needs of workpeople. In elaborate construction projects, on the other hand, where indirect primary employment substantially outweighs direct employment, an important stimulus is given to all kinds of industries supplying materials, thus widening the range of employment instead of concentrating it on relief workers, and at the same time, diverting considerable fractions of the outlay via profits and interest into other than wage-earning hands.

Quite apart from secondary employment, this result creates a significantly different set of conditions. For one thing, the additional workers employed are likely to be more skilled, and it is possible also that fewer of them will be drawn from the totally unemployed. That is, some of the effects are to increase the hours of employment of already employed workers. Again, the diversion of some of the outlays to nonworkers may mean different secondary consequences, for such receipts are more likely to be spent

[5] *New York Times*, Dec. 7, 1936, p. 3.

in different ways, or saved in different proportions, from the receipts of wage earners. The fact that some of the receipts are profits may have the effect of causing employers to desire to invest, and draw upon idle funds, thus adding further expenditures to those arising from the original outlays. A dollar in wages, of course, enters into the circulation and has a series of (probably diminishing) effects, as does also a dollar in profits; but a dollar in profits may, in addition, draw out (say) an additional dollar from idle resources, to have its own circulation and further effects; and these may be very important indeed.

In a depression, especially a major one, a controversy is likely to develop between those who favor relief works and those who favor public works of the usual sort. The first group is thinking of the number of persons to be relieved and argues that a given sum of money will relieve the largest possible number if paid out mostly in wages. It further is likely to argue that the secondary effects are the same, no matter who gets the money. The second group thinks rather of the stimulus to industry and favors larger expenditures on materials as helping precisely the industries in which unemployment is the greatest and which are in most need of stimulus. One result of this conflict is the usual compromise, such as the WPA projects of the 1930's, where wages were a larger fraction of total expenditure than in PWA, but not so large as in relief works. Such a compromise is an unstable solution continually attacked on the one side by those who want to relieve more people with the available sums, and on the other by those who deplore the feebleness of many of the projects and argue for more valuable work, not only as supplying the community with something for its money but as giving the greatest possible stimulus to private industry.

Secondary employment

The volume of secondary employment, which, it will be remembered, covers the whole series of employments brought into being by the use of incomes by primary recipients of all kinds, is very much a matter of conjecture. We have no statistical evidence available, and the estimates made by such writers as Keynes must be regarded as most tentative.

Were the incomes received for primary employment all ex-

pended without delay, and again re-expended by the second rank of recipients, and so on in endless series, then the original outlays moving on from circle to circle would, unless reduced by leakage or stopped by friction, in due time bring about the full employment of all the employable resources of the country. If the original outlays were themselves repeated, as they would be, every month, this constant stream of expenditures, turning over at some recognizable rate per annum, would in relatively short time bring full employment.[6]

The multiplier once more

Analysis, however, indicates that this is not what happens. Various "leakages" prevent the effectiveness of expenditures in each period from maintaining its full or 100 per cent level, so that only a fraction of the original outlays are spent in such ways as increase the activities of the community. Of that fraction, only a fraction is spent in the next period, and so on. If the fraction remained the same through these successive periods (although there is no reason to suppose it would), then the result is a series of rapidly diminishing expenditures, the aggregate of which (at infinity) would be a definite quantity. Thus, if the fraction spent in industrially stimulating ways were one half in each successive use, then the total secondary expenditure from an original $1 would be an additional sum of $1, the greater part of which original sum would be derived from the first few periods of expenditure, as is shown here:

(1)	50% of	$1.00	= $0.50
(2)	50% of	0.50	= 0.25
(3)	50% of	0.25	= 0.1250
(4)	50% of	0.1250	= 0.0625
(5)	50% of	0.0625	= 0.0312
			$0.9687

Thus, in five periods the additional sum aggregates $0.9687 and the total expenditure attributable to $1 of original outlay is nearly $2.

[6] Available evidence seems to justify estimates that what might be called the income-circulation period in the United States as income moves into the hands of its successive recipients, is from three to three and one-half months.

For discussion of the appropriate period, see J. M. Clark, *Economics of Planning Public Works* (Washington, D. C.: 1935), Chapter IX; J. W. Angell, *Investment and Business Cycles* (New York: 1941), Chapter IX; and Fritz Machlup, "Period Analysis and Multiplier Theory" in *Readings in Business Cycle Theory* (Philadelphia: 1944).

The ratio of total expenditure (and presumably total employment) to primary expenditure (or employment) is, in the phraseology made celebrated by Keynes, the "multiplier," the use of which in his theories has been set forth in Chapter 16. It will be noted that the size of the multiplier depends on the fraction spent, or, to put it in another way, the multiplier is the reciprocal of the fraction not effectively entering into use as purchasing power.

We must, therefore, examine what determines the fraction which is not spent, or, if spent, not spent in such ways as to add to the total activity and employment of the community. It is this fraction that limits the total benefits which may be expected from any given outlay on public works in depression. We may conveniently sum up all the ways which determine this fraction under the general term *leakages.*

Leakages

Leakages occur in a great variety of ways. Some income is hoarded or, if "saved," not immediately invested. Some is spent in the stock market and merely affects the prices of securities. Some is used to pay off debts to banks or to those who in turn pay off debts to banks, and, because of inadequate demand for loans, remains idle for shorter or longer periods of time. Some income is spent abroad (this would be a heavy source of leakage in England, not very important in the United States), and although this may occasion equivalent spending from abroad in due time, the lag causes leakage.

This "geographical" leakage is particularly important in regard to local expenditures. Public works expenditures in Chicago, for example, will suffer heavy "leakage" as a large proportion of the new income is spent on "imports," from other areas. A state would suffer from similar limitations. If all local and state bodies expanded together, these leakages would cancel out. This outcome could be facilitated by the adoption of a coördinated plan, or by grants-in-aid from the federal government designed to bring about simultaneous expansions.

Leakage occurs also if expenditures cause price increases, for these reduce the purchasing power of all fixed or relatively fixed incomes and so cancel out some of the increase of expenditures.

Some of the actual demand for goods that remains after these

leakages are deducted does not itself constitute net additions, for it may merely replace sums that would have been spent for relief or charity in regard to formerly unemployed workers now employed. This result, however, does not happen if public expenditures for works are made from loans, where previous charitable payments or relief payments or dole have been made from taxes or by voluntary private contributions. In this case, the burden of charity and dole being removed from private expense enables private spending for other things now to go on; and to this will be added the further expenditures made possible by public works. But where doles are met from loans and are now replaced by public employment also from loans, clearly the net addition made by the latter is much smaller than the gross outlay would indicate. Of course, any public works financed from taxes would be subject to this kind of leakage.

We might sum up by saying that leakages occur either by limiting the amount of money which becomes genuine additional income to the community or by limiting the effective spending of this additional income. In his pamphlet, "The Means to Prosperity," [7] Mr. Keynes suggests that ordinarily not less than 60 per cent of the total outlays of government are "new income" (that is, allowing for replacement of one income by another) and that, of this "new income," perhaps 75 per cent is spent in ways that stimulate industry. In deep depression, when "doles" are a heavy drain on resources, "new income" may be as high as 70 per cent of outlay and 70 to 75 per cent thereof be spent. Hence, at least 50 per cent of the original outlay is used for effective purchasing, and on this basis the multiplier would be 2.

Clark arrives at about the same figure.[8] He estimates 75 per cent of public expenditures is new money, and that about one third of this new money may be lost in leakages. This result makes a net addition of 50 per cent to effective purchasing power, and again the multiplier is 2.

The changing multiplier

It is probable that the multiplier falls as expenditure is increased. It is true that some of the leakages which hold the mul-

[7] The Means to Prosperity (New York: Harcourt Brace & Company, Inc., 1933).
[8] *Economics of Planning Public Works,* p. 89.

tiplier down may actually be reduced. For instance, as incomes increase, the need to pay off debts or back taxes or to restore reserves, and other deflationary actions, is not so imperative. But this effect may be outweighed by other important influences. For one thing, it becomes more and more difficult to maintain the expansionary effects of public expenditures, as it becomes harder to ensure that they are obtained from unused funds and do not encroach on and are not a mere substitute for private expenditures. The more effective public works have been in encouraging recovery, the more certain this limit is to arise. Furthermore, as revival proceeds, the rise in prices and profits puts further limits to the multiplier—the price rise by canceling the effects of outlays, the rise in profits by directing increasing percentages of received income into the hands of the saving classes. This result seems to diminish the efficiency of the remedy as time goes on, but in truth it merely indicates that the remedy is successful.

This success, which fundamentally takes the form of a revival of industry, is reflected back to the government in a reduction in the burden of its public works expenditures, for two reasons. First, relief expenditures of the government or, where such systems are in use, unemployment insurance expenditures by government are reduced as employment increases. This saving reduces the cost of government by amounts which, for England, Keynes estimates as high as one third of public works outlays. Second, there is an increase in the yield of taxes as the income of the community rises under the impact of public expenditures. These added to the first may, if they are as successful as the multiplier indicates, reduce the net cost of public works by as much as 50 per cent.

Neutralizing effects

We must now examine critically the assumptions on which the cumulative possibilities of public works expenditures are based. We shall see that there are many hindrances to the full effectiveness of these expenditures, and that cumulative expansion may be substantially counteracted by unfavorable conditions, some of which may be almost unavoidable incidents of the public expenditures policy itself.

The essential meaning of public expenditures is the creation

of additional purchasing power and the use thereof to build up employment and production at a time when private expenditures are shrunken. By public expenditures, government maintains, or attempts to maintain, a stable level of income to the end that there may be also maintained a stable level of employment. It fills in the gap of purchasing power opened by the deflationary processes of the depression. It is a policy, in short, designed to counteract deflation.

For this reason, it may be said that any aspect of public expenditures that is deflationary is harmful, and that any policy related to public expenditures that is deflationary is unintelligent. Unfortunately, it is not always possible to avoid various deflationary by-products, as it were, of public expenditures; and it is not even easy, public attitudes and congressional psychology being what they are, to rule out deflationary policies, despite the fact that these would seem to be reasonably subject to intelligent control. The following sections will show the nature and extent of these deflationary offsets.

Fiscal policy demands loans, not taxes. 1. The first, and perhaps the most obvious, of these offsets is the result of an inappropriate fiscal policy for financing the expansion of public expenditures. Clearly any form of fiscal arrangement that reduces or tends to reduce private incomes and outlays prorata with the increase of public outlays is to that extent deflationary, tending to neutralize the effects desired, and therefore inappropriate to the end in view. Taxes in general, therefore, are inappropriate as means of revenue for public works. Usually they constitute a transfer rather than a net increase of purchasing power. What is gained by the recipients of government outlays is lost by the payer of taxes. As it may be assumed, as a general rule, that taxes are paid from current income rather than from savings or hoardings, the result is to neutralize public outlays.

Of course, not all taxes operate in this way. Some taxes might well tap currently unused resources, and, if taxes must be relied on for at least some of the revenues for public works, clearly taxes that tap unused resources rather than taxes that do not should be employed. The most desirable taxes, therefore, would seem to be inheritance taxes and surtaxes on large incomes, since in times of depressions the sources of these taxes are reasonably likely to

be idle funds which in good times might be invested in business. Even these, however, might encroach on expenditures; or if not, they might cause heavy sales of securities, which as such have deflationary effects. At the other extreme, sales taxes, which come directly from current expenditures and bear most heavily on the great mass of incomes, must be regarded, from this standpoint, as the least desirable tax. They may have to be used, particularly by local and state units desperate over loss of regular revenues and unable to float loans, but they would be a particularly inappropriate form of tax to be levied by the federal government either to replace regular revenues, or more especially, to raise funds for public works. The persistent drives in Congress for such taxation during the depression of the 1930's merely show how deep-seated is convention in fiscal policy and how hard it is to meet new situations rationally.

The most effective method of raising funds for public works, if deflationary consequences are to be avoided, is by loans. Loans, as compared with taxes, have smaller deflationary effects. Under the most favorable circumstances, indeed, they may have no deflationary effects whatever, and involve no cancellation or neutralization of the public works outlays. But for this to occur, loans must tap resources that would otherwise lie idle. Loans made direct from the public do not necessarily do this, as the funds subscribed thereto might otherwise have been invested in the securities of private business. Even in this quarter, the general prostration of business activities and the almost complete disappearance of new issues from the market indicate that uninvested resources are there, if they can be reached.

Where public loans are sold to banks, whose earning assets in such times are greatly reduced and whose loans to business are at a minimum and not easy to increase, it is fairly certain that idle funds are being tapped. Most certain of all would be for the government to borrow from the Federal Reserve System. There is little doubt, certainly in the early stages of borrowing, that the great resources of the Federal Reserve Banks can be drawn on at such times without encroaching in any important degree on their lending power to the banks in general and, through them, to private business. Indeed, if the bonds of the government are made eligible for loans by individuals at banks and by banks at the

Federal Reserve Banks, then it would seem that all government borrowing, whether from individuals, banks, or Federal Reserve Banks, would be inflationary.

Doubtless even the reserves of the Federal Reserve System are limited, and the amount of loans they can support has definite limits also. That is to say, as the increase of government borrowing proceeds, deposits in the Federal Reserve Banks gradually increase. These deposits accrue first to the credit of the government, but as these are drawn on by check to finance public expenditures, and as these checks are deposited in banks in general and sent by them to be credited to their accounts in the Federal Reserve Banks, the increasing deposits emerge as deposits to the credit of banks in general. Against this growing volume of deposits, the reserves of Federal Reserve Banks, unless they are fortified, as they fortunately were in the 1930's, by an increase of gold from abroad, or by devaluation of the currency unit, or from the product of home mines, gradually become a smaller and smaller percentage until, as they approach conventional or legal limits, a restriction on loans, coupled with a rising rate of rediscount, is certain to emerge.

When this situation is reached, further borrowing by government creates no net increase in purchasing power but only a transfer of potentially active resources from private business to government. But it is to be hoped that, before this situation arrives, business will have been encouraged to expand, and the depression, together with the need for public expenditures, will have given way before the forces of recovery.

Misplaced governmental economy. 2. The second deflationary aspect arises from the irrational demand, which appears during depression, that government should reduce its expenses in all its regular services. Economy in the regular budget and reduction of the cost, and often of the amount, of the established services of government are demanded not only because of shrinking revenues from taxation, but as a concession to that section of the community which regards such economy as the best contribution government can make toward encouraging the revival of private business. It is conceivable that such economies are the right way to proceed in meeting a depression. But they obviously detract from the success of a policy of public works, once this has been decided upon

as the correct policy to follow. It is absurd to increase expenditures and employment in one direction while reducing expenditures and employment in another. As government is practically the only body able to maintain consumption and incomes in depression, and as public works are specifically designed to see that just that is done, it would seem to be worse than folly to listen to economy pleas, at least until recovery is once more under way.

We have already seen what compromises have to be adopted in the various departments of public expenditure in order to satisfy a public opinion which at one and the same time demands public works for recovery and reduction in current regular expenses for the sake of balancing the budget. Some compromise, however, can scarcely be avoided. Thus, if wages and prices are falling, as happens in a depression, fiscal policy may reduce government salaries and wages proportionately, so that only real, not nominal, expenditures are maintained. Or again, economies may be introduced into governmental departments by eliminating less essential services and by consolidation and rationalization. This economy is loudly demanded by public, especially business, opinion, and in the long run is good. But it is deflationary as far as it goes, and poorly timed.

If the reduction of such current expenditures released funds for business uses, no harm would result. Indeed, it is a common statement of business that it stands ready to go ahead if government balances the budget. Unfortunately, this advance is not likely to happen, particularly in the early stages of depression. As long as depression is proceeding, there is not much chance of business expansion and great likelihood that business will take the gain from reduced taxes to increase cash reserves, improve liquidity, and generally fortify its economic position. For this reason, reduction in government expenditures on current services, together with whatever reduction of taxes this may involve, merely leads to an increase of idle resources and a deeper depression.

We may conclude that the reduction of governmental expenditures in depression is a deflationary influence and neutralizes to a proportionate degree the effectiveness of a public expenditures program.

Public works may be depressant to private business. 3. A third neutralizing effect arises from any reduction of investment by

business as a result of the public expenditures. This reduction may be caused either by the competitive effects of public works projects or from the psychological effects of loss of confidence or other fear of government encroachment.

It is always assumed that public works must be and can be of such a nature as not to compete with private enterprise; otherwise, the net stimulus to business must be reduced. On the face of it, the noncompetitive character of public works seems to be assured by their limitation to fields in which private enterprise does not ordinarily enter. Public buildings, roads, canals, docks, parkways, and so on are not financed by private investment. But the boundary between public and private projects is not a rigid one, and in depressions, particularly if they are severe, public enterprise is apt to be pushed into controversial areas. The development of the TVA, with its production and transmission of power, is an example. Its activities competed not only with the business of private utilities in the region, but even with the local coal industry, which claimed that its sales were affected by the spread of cheap power and light. Similarly, housing projects carried on as part of a public works program definitely encroach on a field occupied by private business. True it may be that the low-cost housing field in which government operates is one that has never been, nor is likely to be in the near future, exploited by private agencies, but the limits of private enterprise can never be foretold, and competition at the margin is theoretically unavoidable.

Even if the government limits its enterprise to its orthodox fields, it cannot avoid being to some degree a competitor of private business. Every project undertaken constitutes a demand for labor, for materials, and for capital. The sum of projects together is a powerful influence in the market for these means of production. Wages, prices of materials, and interest rates, all important costs of industry, are kept higher than they otherwise would be. Even though the depression is accompanied by apparent surpluses both of men and of capital, market rates may be tightened. Public works are often undertaken, indeed, in a spirit of wage maintenance. If there is common acceptance of underconsumption theories, public officials can be persuaded easily that reduction of wages is reduction of the consumer purchasing power which supports industry. Furthermore, the entry of the government into

the capital market, try though it may to tap idle resources, does not make it easier for other borrowers. Even though interest rates are not affected, government issues make a tough competitor for private issues, for which there is small chance of sale as long as the superior credit of the government is being actively used. Government securities take a larger and larger place in the investments of banks. They offer advantages in safety and liquidity no other security can offer. In the face of this, banks may be cold to commercial borrowers, preferring to hold, apart from government issues, abnormal amounts of cash.

These dangers may be particularly ominous in the field of construction, where public works cause such heavy concentration of demand.

Construction costs seem to have an abnormal power of resisting deflation in depression. Prices of building materials are "sticky" prices, and wages in the building trades are notoriously inflexible. Labor unions in construction seem to prefer an extraordinarily high percentage of unemployment in depression to any substantial concession in wages. Indexes of construction costs exhibit this tendency clearly. In 1932 the Aberthaw Index of construction costs stood at 88.2 per cent of its 1929 level. National income produced fell from $83.3 billions in 1929 to $40.0 billions in 1932. In 1932 it stood at 38.4 per cent of its 1929 level. The effect of government expenditures is to reinforce this tendency. It stiffens costs in an industry with a chronic tendency to stiffness, and at a time when deflation of costs may be a prerequisite to any early large-scale revival of private demand for the real capital, buildings, machinery, and so forth, which the construction industry produces.

The discouraging effects on private investment by this stiffening of costs may be intensified by the general weakening of confidence and the widespread distrust produced by the unaccustomed extension both of public expenditures and of the area occupied by public enterprise. Uncertainty concerning the wisdom and the outcome of government expenditures may cause business to postpone commitments. In the fear lest business collapse when the artificial support of government is withdrawn, improvements and extensions which might be carried on may be withheld. There may arise a dread of runaway inflation engendered by excessive budget-

ary deficits, for inflation makes any business venture a gamble. The fear thereof is a damper on conservative enterprise.

One cannot safely assume, therefore, that public expenditures are, as their advocates hold, stimulating to private enterprise. They may, indeed, be quite the reverse. If they actually retard private business activity, the efficacy of public works may be substantially reduced, for so great are private compared with public expenditures that even a small reduction in the volume of private enterprise may neutralize a relatively large part of public works.

The gold standard as a limit to public works. 4. Finally, there are neutralizing influences arising from foreign trade, more particularly for countries that try to maintain the gold standard.

We have seen that one of the "leakages" in respect to the multiplier is purchases abroad. This geographical leakage means that some part of the efficiency of public expenditures as a means of increased employment at home is lost.

This kind of leakage would exist under any system of international monetary relationships. But it would be particularly troublesome if the country were on the gold standard. If the increase of imports were substantially to unbalance international payments, there would be an outflow of gold, with multiple contraction of bank credit. Thus not only is the multiplying effect at home of public expenditures reduced, but a deflationary influence sets in which may seriously counteract whatever benefits might have derived from the government's action.

This would make a serious dilemma for the government, which, if pushed far enough, might have to choose between public expenditures and the maintenance of the gold standard.[9] These awkward difficulties could be met if all major nations agreed to inaugurate simultaneous programs of public works or other income raising expenditures. We have seen that even under the operation of the International Monetary Fund, with its easements in respect to monetary flows, it would be desirable to have some international organization specifically devoted to the problem of anticyclical investment.

[9] A. D. Gayer suggests that this choice had to be faced by Mr. Roosevelt in 1933. His determination to expand greatly the volume of public works forced him, unwillingly, to adopt measures taking the country off the gold standard. *Public Works in Prosperity and Depression* (New York: National Bureau of Economic Research, 1935), Chapter 1.

What is the net efficiency of public works?

We have seen in the early sections of this chapter that the effectiveness of public works as a stimulus cannot be measured merely by the volume of primary expenditures. Our survey of the neutralizing possibilities to which public works are exposed now discloses that the total expenditures, both primary and secondary, do not tell the whole story. It is certain that these total expenditures are never 100 per cent efficient. Some deduction, large or small, must be made to allow for deflation. It is true that this deduction cannot readily be estimated. It is true also that some of the deflationary influences can be avoided by proper policy. But some counteracting deflation there is bound to be, especially that undetermined but possibly formidable amount that springs from the hesitancies of the business community.

It is unfortunate that the calculations by which the efficiency of public works might be measured cannot at the present be anything but intelligent guesswork. The expansive possibilities associated with the multiplier are quite conjectural. No reliable investigations are available for establishing the volume of secondary employment. We know little as to the extent of leakages and how they change as expenditure proceeds. There is nothing whatever on which to estimate the deflationary effects which an unprecedented public works program might set in motion.

It might seem that the practical experiment in public works provided by the Roosevelt administration in the years from 1933 to 1940 would throw light upon the effectiveness of these stabilizing policies. If it does, the light is a very uncertain one. Indeed, the experiment turns out on examination to be a battleground of conflicting claims, ranging from those who find therein the source of all the recovery the country has enjoyed to those who, on the contrary, see in it nothing but a drag on the natural recuperative powers of private industry.

The defenders can point to the undeniable facts of recovery. The national income, which had fallen as low as 40 billions in 1932, rose to 60 billions in 1937 and 70 billions in 1939. The fluctuating but generally upward trend of business from 1934 to the summer of 1937 was one of the longest periods of expansion we have known. This expansion coincided with the increase of defi-

cit spending by the federal government. When the deficit was increasing, business recovered; when it was cut down as in 1936–1937, business fell away.

Against this position the opponents have equally persuasive arguments. The national income increased, it is true, but the increase was substantially less than in other industrial countries of the world. There may have been recovery up to 1937, but it was continually punctuated with relapse, and even at the top, business indexes had failed to reach the line of normal. Nineteen hundred thirty-seven was a peak but a submerged peak, not even up to the level which the normal growth of the country would justify. Furthermore, the recovery was artificial in its nature. Dependent on government aid, it fell away as soon as the aid was withdrawn. The boom of 1935–1936 and the relapse of 1937, far from proving the effectiveness of government expenditures, merely indicated how artificial the whole situation had become.

Conclusion

These confusing testimonies mean that practical verification of the effectiveness of public works cannot yet be had. They do not mean, however, that our analysis of the economics of public works is of merely theoretical interest. It does lay bare the favorable and unfavorable influences at work. It indicates the direction which intelligent planning must take in order to obtain the greatest net effectiveness from public works. Specifically, it indicates that if the government guards against illogical economy when public works are in progress, raises its funds from loans rather than taxes, and uses the resources of monetary control to prevent drains of gold abroad, the deflationary influence of all factors save one can be greatly reduced. The one that cannot so easily be reduced —that is to say, the hesitant attitude of business in the face of expanding public expenditures—may perhaps gradually disappear as business becomes accustomed to stabilization measures and regards them as rational devices from which all will draw benefit. That this is not impossible is seen from the contemporary experience of Sweden, where public works as a stabilizer are accepted as readily in business circles as are the open-market operations of Federal Reserve Banks in those of the United States. Until this attitude arrives, the adverse effects of business hesitancy can be reduced to

a minimum by keeping public works to the orthodox fields that now enjoy acceptance and by avoiding the tendency to utilize them under the influence of purchasing-power theories merely as a means for putting more money into circulation.

This conclusion clearly means that public works will be most effective when they are used as *one* of the armory of weapons available for attacking a depression, not as a panacea for spending our way into prosperity.

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STABILIZING THE VOLUME OF CONSUMPTION

ONE WAY OF LOOKING at the business cycle is to regard it as a varying flow of purchasing power or a varying stream of monetary income. This monetary income stream, which is constituted by the aggregate of the incomes of individuals in the economic system, rises in boom and falls in depression. Its size is, in a very large part, determined by the activities of the producers of goods and services on the one hand, and by the activities of government on the other, these two agencies acting as the principal distributors of income to those who supply the agents and services of production. But the size of the income stream may be affected also by the autonomous decisions of consumers, who, apart from the variations of income imposed on them by the producers (including governments), may themselves vary the income stream within limits by hoarding in slumps and "dishoarding" in booms. In the unregulated business cycle of the classical type, all three sources of income increased and decreased in step. When private business was good, government business was good, because taxes were easy to collect, and the consumer felt the urge to spend and moved what income he had at a greater speed. In reverse, business fell; government, its reserves shrinking, reduced its activities; and the consumer, fearful of his shrinking income, shrunk its activity still more by hoarding what he had the nerve to hoard.

Can consumers' income be stabilized?

The question now is: In what way might this income, visualized as a stream of purchasing power, be stabilized? The degree to

which this can be done by direct operation on the essential sources of income—namely, producers' expenditures and the activities of government—has been examined already. In the chapters on monetary management, the problem of inducing variations in business expenditure was attacked; and in the chapters on public works, the problem of making government expenditures contribute to stability was examined. But if the measures outlined therein fail to remedy the situation, would it not be possible to attack the problem directly (and immediately) by measures stabilizing the flow of income to consumers? After all, as we have seen, monetary management may not be completely successful, and public works may be unavoidably slow in taking effect; but if funds could be paid to consumers as soon as depression begins, would not expenditure on consumption goods be immediately restored, and through their influence the demand for production likewise be maintained?

On the face of it, if, as soon as depression emerges, new money could somehow be put in the hands of consumers to be spent as they chose, there need be no falling off in the demand for consumption goods. Prices would not fall, and the falling profits of industries making consumption goods (which commonly remove the incentive for capital development) would be averted. If, as recovery is brought about, the normal level of activity is restored, making the additional money paid to consumers redundant and a source of potential inflation, then consumers' incomes could be assessed in some way and the funds so raised removed from circulation, so that consumers' expenditures would be checked and the rise of prices and profits that make for booms prevented.

Let us examine now more closely various expedients that might, more or less completely, make for this desired stabilization.

Business Reserves

Common business prudence leads most businesses to carry reserves for various purposes. To the extent that these reserves happen to fit into the cyclical pattern, in the sense that they are laid aside in good times to be expended in bad, to that degree they would seem to make for stabilization, for they tend to make some of the expenditures more stable than they otherwise would be. Not all reserves are of this nature. Insurance reserves, for exam-

ple, have to do with other types of emergencies. Depreciation reserves, too, probably the largest single type, may be laid aside in growing volume in expansion, but their use in depression is uncertain. Indeed, the replacements for which they are designed may actually be postponed and the funds, instead of being put into the stream of circulation, may be added to hoards and so be deflationary. Other reserves, on the other hand, are specifically designed to furnish purchasing power in depression—for example, dividend equalization reserves which help to maintain dividends to stockholders when current earnings begin to slump. If the business carried unemployment reserves, these, too, would tend to maintain consumer expenditures. One might add that, in deep depressions, all reserves of corporations, irrespective of their original purpose, may become a source of expenditure, as the necessities of the business cause depreciation reserves, insurance reserves, or even reserves for sinking funds to be taken from their destined use (which for the moment is not emerging) and used to maintain wages and dividends. It is the existence of these funds (whether called "reserve" or "surplus") and the possibility of their being a mainstay of consumer purchasing power in depression which led many critics of the administration to deplore the 1936 taxes on undistributed corporate surplus. They felt that, if this important source of income stabilization were dissipated, depressions would be deeper than ever.

Business reserves not effective for stabilization

There are formidable limitations, however, to the effectiveness of business reserves, which make them probably of minor importance.

For one thing, they are not sufficiently universal to cover more than a fraction of the volume of purchasing power necessary for stabilization. Many concerns do not attempt dividend equalization; very few of their own volition have even tried to set up unemployment reserves, the particular kind of reserves most likely to be effective and most adapted to the task of stabilization.

Furthermore, the investment of business reserves may perpetuate the very fluctuations they might seem designed to alleviate. The source of any effective corporate reserves to be used on the emergence of a depression must be accumulations held over from

prosperity; otherwise, corporations could hardly add to their disbursements when depression arrived; and the very fact that they are accumulated would seem to modify the extent of the boom. Unfortunately, this outcome is not quite what happens. Reserves are not merely held back from payment. They are commonly invested in the corporation. If the reserves are not kept in cash (and idle cash is a constant irritation to planned management) they must emerge somewhere as part of the excess assets of the corporation, which are thus bigger than they would otherwise have been. The reserves have become "invested." Thus they add to capital formation and tend thereby possibly to increase, and certainly not to diminish the expansive tendencies in the economy. If they enabled business to reduce its dependence on banks, allowing loans to expand in other directions, they would exaggerate expansive tendencies, and a device that is supposed to prevent depression turns into an influence that makes depressions more likely to arrive, and more severe if they do.

What is necessary, if purchasing power is to be stabilized, is: (a) that adequate funds be forthcoming on the emergence of a depression, either from reserves or from some other source; and (b) that, if reserves are the source (and it may be that reserves are the only effective source), they be collected and maintained in such a form as not to aggravate the conditions making for boom.

Unemployment Insurance

Legal provision for unemployment insurance, if properly handled, seems best adapted, as far as it goes, to meet the problem of maintaining consumer income. It can, apparently, eliminate the two great difficulties of ordinary corporation reserves—that is to say, (1) by being compulsory over the general field of industry, it will not suffer from the limited volume of voluntary corporation reserves; (2) if properly invested and disbursed, there is no reason why the fund should defeat itself, as corporation reserves may do, by accentuating the instability it is designed to remove.

The ordinary and primary purpose of unemployment insurance is to furnish a means of support for unemployed workers in a form that is free from the uncertainties and humiliations of "doles" or charity in any form of "relief." But it has, or may have, the further consequences of stabilizing industry by stabilizing the

volume of consumers' income. Whatever the details of insurance in law and practice (and these details are numerous and complicated), its essence is the collection of funds from employed workers and/or their employers during active employment to create reserves from which, as long as they last, payment can be made to the unemployed. As far as cyclical fluctuations are concerned, this scheme amounts to collecting reserves in good times in order to distribute them in bad times, a process that, in the face of it, is an active force for stabilization. It moderates expansion during good times by the collection of reserves from wage incomes, and in bad times it puts purchasing power to use through the maintained consumption of unemployed workers. In addition, it serves, to some degree, to prevent the further source of deflation that, in depression, is always added to shrinkage in the volume of disbursements to consumers—that is to say, the reduction in the velocity of monetary circulation as the masses of the people, dreading unemployment, lay aside funds for the emergency. Without unemployment insurance, this hoarding may be a potent cause of cumulative deflation. With unemployment insurance, fear psychology should be at least to some degree removed, and the tendency to hoarding, with its concomitant of idle funds finding no outlet in new investment, should be stopped or substantially reduced.

It is further claimed that the existence of the insurance burden has a more direct influence making for stabilization. Employers, being anxious to avoid the cost of insurance, seek to stabilize their production, and by reducing unemployment to a minimum, reduce the burden on their reserves. Most laws, indeed, are deliberately drawn so as to bring about this result. In recent state laws, reserves, instead of being pooled, are commonly kept separate for each employer (except a small emergency reserve for the support of all) and so arranged that those who succeed in regularizing their work not only keep their reserves intact but, as soon as reserves reach a certain level, are freed from the burden of further contributions.

It may, therefore, be claimed for insurance reserves that, in one way or another, they exercise a stabilizing influence. If employers are moved to measures of stabilization, the problem is to that degree solved. Even if they are not, the aggregate of consumers'

demand will be stabilized by the alternate collection and disbursement of the funds.

Let us now examine the merit of these claims.

Unemployment insurance as a stabilizer

1. Experience shows that not much stabilization can be expected from the voluntary efforts of employers. The incentive to stabilization is not strong, and, even if it were, the power to stabilize is lacking.

The incentive to regularization arising from the cost of reserves is, after all, relatively small. Only in those industries where the wage bill is large relative either to total costs or total values would the direct burden of unemployment reserves be sufficiently important to encourage the employer to tackle the extremely complex task of stabilization.

Thus, in 1939, wages for all manufacturing industries in the United States constituted 16 per cent of the total value of products, and 37 per cent of total value added by manufacture.[1] This means that an insurance burden of 3 per cent of wages would amount to one-half of 1 per cent of total value of products, and 1.1 per cent of total value added. These are not assessments that in themselves exercise much pressure toward stabilization.

When one adds to this that, quite apart from the influence of unemployment insurance, every intelligent employer must know that stabilizing output would reduce his overhead costs and possibly enable him to get workers at lower hourly wages, and that the gains from these sources would be much more substantial than the gains from avoiding insurance payments, one can readily see that, if these advantages have not led to stabilization, it is hardly probable that the desire to escape insurance payments would.

But there is an even more formidable difficulty. The major reason why we will not get stabilization from unemployment insurance (and the reason why we have not got it from employers in the past despite the powerful advantages that it would give) is that such stabilization by individual concerns is practically impossible to achieve. Most of the stabilization effected by individual concerns in the past has been in reducing seasonal fluctuations. Making for stock, diversifying output, transferring workmen from

[1] Source: Bureau of the Census.

department to department, budgeting production, and so on, are possible, within limits, for the short-time fluctuations of the season. But even here there are limits, and when it is a question of the relatively long-time fluctuations of the business cycle, when all business is booming or all depressed, the simple devices appropriate to seasons are not of much use. What is needed is not the isolated action of individual concerns, nor even of individual industries, but rather the combined action of the whole industrial process. Even the monopolies and monopolistic groups that control the affairs of an industry do not have power to achieve the stability wanted. They talk stability and achieve a sort of stability; but the stability they get is price, not production, stability. Indeed, stabilizing prices without concern for the general state of demand increases instability of output, making it greater in good times and less in bad times than a flexible price would have produced.

In short, cyclical unemployment is a problem not of the firm, nor even of the industry, but of the economic system as a whole, variations of which only centralized action can correct. This centralized action can be achieved in practice only by government.

2. *Can insurance reserves stabilize consumer income?* Now let us examine the effectiveness of the greater stability of consumers' income that unemployment insurance is designed to bring about, for in this, rather than in pressure on individual producers, lies the hope of stabilization.

The shifting of consumers' income, which is implicit in unemployment insurance, superficially seems easy; but, as a matter of fact, it involves considerable difficulties arising largely from the possible consequences of the collection and disbursement of unemployment reserves.

Let it be assumed that such reserves consist exclusively of deductions from workers' wages paid by employers into a government-controlled fund. This process, as such, reduces *pro tanto* the consuming power of wage earners and, tied as it is to the total of wage payments, should serve as an increasingly powerful brake upon expansion. If, however, the collected reserves are offered for investment so that their earnings may reduce the burdens of the tax, the effect is to lower the rate of interest, or retard its rise, and encourage business thereby to proceed with more expansion, add more to capacity and output, than it would otherwise have

done. If the fund is invested in government bonds, as commonly required by law, it would raise both their prices and the prices of all bonds, and thus give obvious encouragement to the expansion of capital issues. In so far as the conditions of boom are caused by failure of interest rates to rise relatively to profits, this outcome of the use of insurance fund is in direct opposition to the needs of stabilizing policy.

To put it in another way, if conditions of boom are caused by a rate of investment that is excessive and cannot be maintained, then insurance reserves, by transfer of resources from consumption to investment, would seem rather to reinforce conditions of boom than to counteract them.

Furthermore, the arrival of depression and the consequent demand for the reserves call for the liquidation of the bonds in which the reserves are invested. As this occurs when the bond market is weak and considerable liquidation of other holdings is in process, a powerful deflationary influence would be set in motion. If the bonds were sold directly or indirectly to those who might otherwise have spent their money on consumption, no addition to purchasing power in the aggregate is made, and the total of consumer purchases cannot rise. Furthermore the sales of bonds depress their price and raise interest rates—a process which is just the opposite of that demanded by a stabilizing policy.

It is, therefore, possible that unemployment insurance reserves, if uncautiously handled, and under certain conditions, would actually serve to increase booms and depressions instead of reducing them.

How should reserves be invested? How can this unfortunate outcome be avoided? If the reserve funds were invested in government bonds, it would be possible to prevent undesirable effects in business through open-market operations of the Federal Reserve Banks. If easy interest rates unduly encourage industrial expansion, open-market operations through the sale of the appropriate volume of securities would serve to neutralize the effects of the fund. Similarly, in depression, sales of bonds from the fund could be kept from deflationary effects by the appropriate purchase of bonds by the Federal Reserve System.

A simple mechanism would be to deposit the insurance funds (or part of them) directly in the Federal Reserve Banks where they

could be controlled to the end of checking undue expansion. This process would tend to reinforce the efforts every central bank makes to control booms, for whereas in some booms easy money conditions (often arising from previous depressions, and certainly so, if government has done much to relieve them) make banking control difficult, the continual and compulsory flow of funds into the insurance reserve and thence into the reserve banks would keep the banks in much closer touch with the money market and enable them to check credit expansion more quickly and more effectively than they otherwise could do.

The use of reserves in depression. With the onset of depression, when disbursements from the insurance fund must exceed, and in time greatly exceed, the collections, payments from the fund (via checks on the Federal Reserve Banks) add to member banks' reserves, ease their financial situation, enable them to pay off loans at the reserve banks if they need to, and in general, maintain that ease of money conditions and lowness of interest rates that are necessary to cope with depression conditions. There would be no large sale of bonds to affect investment conditions unfavorably. The result would be to transfer funds to unemployed persons, not from the balances of other individuals who might otherwise have spent or invested the money, but from the unutilized resources of the central banking system, the use of which is not likely to have anything but inflationary and buoyant effects. The expenditures of unemployed persons put new purchasing power to work that would otherwise have been idle, and is a support to all business activity. The fact that the funds come from such a respectable and businesslike source as insurance would tend to prevent the offsetting effects of deterioration of confidence in the government such as would arise when, because of lack of insurance reserves, resort must be had to "doles" or other forms of "relief" expenditures.

The above analysis seems to indicate that unemployment insurance is adapted, in theory, to the task of stabilization, and that proper policy in the use of the funds will, within limits imposed by their size, actually make stabilization effective. If embodied in a law of wide scope, as is the assumption, the fund is large enough to be reasonably effective; and, if handled through the agency of or under the direction of the central banking system,

there seems no reason why its beneficent effects should be seriously neutralized by its being inflationary or deflationary when it should be the reverse.

Limitations of unemployment insurance. There are, however, other possible difficulties in unemployment reserves that prevent them from performing an adequate job of stabilization.

1. As insurance reserves are usually based on a payroll tax, which is presumably shifted to the workers, all those who lean to underconsumptionist views of the cycle would regard this basis of collection as quite wrong. It cuts down on the purchasing power of wage earners, at a time when it is not rising rapidly enough in any case. The proper source of funds, in this view, would be taxes on high incomes and excess profits. These taxes get at the source of excessive expansion; namely, excessive investment by persons of great wealth; and thereby not only collect a fund for such depressions as may occur, but do something to prevent depressions from occurring.

2. There is a possibility that unemployment insurance, by giving workers something to fall back on in depression, may fortify their natural resistance to wage reductions. This maintenance of wage costs in the face of falling prices is held by some to cause a greater contraction in industrial activity than would otherwise occur. This matter is discussed more fully in the next chapter. Here it is enough to say that the customary limitation of insurance payments to 50 per cent of current wages at the maximum would make idleness a less desirable alternative than employment even at somewhat lower wages than before.

These two objections, however, are conjectural. A third difficulty is more serious.

3. No workable and practically acceptable scheme of insurance can be expected to cover anything save relatively short periods of unemployment. Douglas has estimated that an assessment of 3 per cent of average total earnings, in occupations commonly covered by insurance, would permit benefits of 50 per cent of wages with maximum of $15 a week for 16 weeks per year after a three-weeks' waiting period, provided unemployment over a major cycle were 10 per cent.[2] This agrees with later estimates. Lester holds that the present payroll tax of 3 per cent, with the

[2] Douglas, *Controlling Depressions*, pp. 259–260.

higher wage scales now ruling, would permit maximum benefits of $20 a week for not longer than 26 weeks, provided unemployment, year in and year out, averages 8 per cent.[3]

This scale of benefits would provide purchasing power adequate to cushion a minor slump, but it would hardly be adequate for major depressions, in which output and employment, particularly in the capital goods industries, fall far more than 10 per cent, and for periods considerably longer than 16 weeks. In such times, insurance reserves built on normal levels of contributions will quite certainly prove inadequate. More and more people as time goes on will exhaust their total benefit claims, and those added to the groups commonly excluded from the insurance system, such as agricultural workers and domestic servants, may make a formidable total. To maintain the purchasing power of these people involves either extended benefits, such as were devised in England in the 1920's, or other supplementary payments not available through normal insurance channels.

Stabilizing Consumers' Income in General

Unemployment insurance has but limited powers of stabilization. This is natural enough. It is designed to be insurance, not a stabilization mechanism. Its primary purpose is to insure, as far as can be done safely by insurance methods, against the specific risks of unemployment. If it contributes to stabilization of consumers' income, as it does to a certain degree, it does so incidentally, and not as its principal purpose. It does not stabilize consumers' income as such; it stabilizes that part which comes to a certain fraction of the wage-earning class during a specific and limited period of time. It does not even cover all wage earners. In the United States at present, agricultural workers, employees of the federal government, employees of nonprofit institutions, and employees in "small" establishments (commonly those employing less than eight employees) are not covered by insurance. Moreover, it does not touch unemployed persons not in wage-earning groups, nor does it restore or stabilize in any way (except indirectly) the income of those who receive profits or interest, or other nonwage income. If, therefore, income stabilization is the

[3] R. A. Lester, *Providing for Unemployed Workers in the Transition* (New York: McGraw-Hill Book Company, Inc., 1945), p. 47.

aim, and if income stabilization as such can be made effective, then the stabilization (as far as possible) of *all* incomes would seem to be the correct policy.

A partial, but relatively unscientific, approach to this problem is found in such programs as Social Credit and the Townsend Plan, both of which owe their popularity with low-income groups to their insistence on the importance of maintaining consumption as a means of avoiding or curing depression.

Social credit

Of these, the Social Credit plan[4] is the more comprehensive and, as far as it goes, more defensible. Social Credit is based on two fundamental propositions: (1) that the processes of technology and science (which are essentially a social heritage belonging to all of us and to which many persons and groups, alive and dead, have contributed) make it possible, were they effectively used, to bring a high and continuous level of income for all; and (2) that our accounting and monetary systems so limit the supply of consumer purchasing power as to make it impossible to market the reasonably possible supply of producible goods and services; and that hence we run into depressions every time we try to make use of our industrial equipment and methods in the way engineering and scientific considerations would dictate. The cure for this evil, therefore, is for the community to supply its citizens as consumers with the purchasing power which, on the one hand, is due to them as a social dividend on their heritage of technology and science, and, on the other, is necessary if the product of industry is to be adequately salable. This purchasing power the Social Credit plan would supply by appropriate payments to consumers, via the Treasury, or via banks, or in whatever way seems most effective. These payments would be large enough to ensure effective demand for all the goods that industry is, at any given time, capable, technologically and physically, of producing; and, furthermore, they would be increased with every further increase, through invention and discovery, of the technological powers of industry. It appears to be the belief of the Social Credit advocates that, by this means, industry would reach and hold full employment of its resources, and that depressions would be made to disappear. They hold that

[4] See also the theories of Major C. H. Douglas, Chapter 14.

this mechanism would bring output to a level never reached even in the greatest boom, and hold it at this level without serious interruption.

The Townsend Plan. Somewhat similar claims are made for the Townsend Plan. This plan, as it originally was stated, would provide an income of $200 a month to every person in the United States over 60 years of age, who was a citizen of the United States, and who agreed both to drop whatever employment he or she had and also to spend the "pension" within the month. Apart from the atmosphere of social justice to the older members of society in which the plan is immersed, and apart also from certain personal moral angles which seem characteristic of all such schemes, the essential beliefs on which the plan is based are these: (1) that the reason for the abnormally low level of production in depression, and the chronically and unnecessarily low level of production even in booms (considering our technical abilities), lies in the lack of consumer purchasing power; and (2) that the increase of purchasing power in the hands of consumers, when coupled with some device to prevent mere hoarding, will stimulate industry; and, if the increase of this purchasing power is carefully measured to fit the need, it should bring industry to the highest level justified by our technological and scientific knowledge.

The mechanism by which these payments are to be financed is by a general tax on transactions, the yield from which seems to Townsendites to be sufficient to meet the demands. Obviously, quite apart from the possible consequences of the payments in stimulating industry, this method of raising funds is inappropriate. Taxation, as a general rule, merely transfers purchasing power. It does not add to the aggregate in use. It is conceivable that taxes might be paid from idle resources, but this outcome is unlikely, particularly in the case of a transactions tax. It is possible, too, that the forced circulation of pension money might increase the velocity of circulation of money provided the funds flowed from a slow-velocity to a fast-velocity area of use. But this result is improbable and uncertain; and it may be repeated, therefore, that a transactions tax is a particularly inappropriate method of financing attempted additions to consumer purchasing power. Indeed, this characteristic is the most obvious and certain defect of Townsend or similar plans.

But the fundamental defect of both Social Credit and the Townsend Plan lies in their inability to serve as a means of stabilization. Based as they both are on the assumption that what is needed is continuous expansion of purchasing power, they are not adapted to cyclical variations. Instead of expanding in depression and contracting (relatively) in boom, their means of payment continuously expand. Hence, except in the most favorable possible assumptions, they must make for inflation and be wrecked on the normal consequences thereof.

Despite their defects, however, Social Credit, the Townsend Plan, and similar schemes raise the question of whether, with proper methods of finance and with appropriate timing, general payments to consumers might not be an effective device for stabilizing industry and employment; or, to put it in other words, whether the relatively narrow field of unemployment reserves might not be enlarged to cover the whole area of consumer purchasing power.

Stabilizing incomes through flexible taxes

What is needed to stabilize consumption in general, as compared to the limited field of unemployment compensation, is to increase the incomes of all consumers at the advent of depression. When the normal level of activity is restored, and the additional income becomes unnecessary and a potential source of inflation, consumers' incomes would be assessed to remove the excess funds from circulation. Were these measures begun promptly at the start of deflation, the evil might be nipped in the bud, and prosperity restored at the earliest moment.[5]

As the persons most in need are the unemployed, a simple method would be to make payments to all persons out of work because of depression. This method would be different from unemployment insurance, although in a broad way it might affect the same group of persons. Unemployment insurance is paid to all persons insured, on account of any kind of unemployment and for limited periods of time. These benefits, on the other hand, would be paid only for unemployment due to depression, for only

[5] For a general analysis of this problem, see J. E. Meade, *Consumers' Credits and Unemployment* (New York: Oxford University Press, 1938). See also papers on "Fiscal Policy in Prosperity and Depression" and "Timing and Administering Fiscal Policy" in *American Economic Review*, Papers and Proceedings, May 1948.

this kind of unemployment can be said to be due to a deficiency of consumer demand. Seasonal unemployment, on the one hand, and technological unemployment, on the other, which are not due to a deficiency of consumer demand in this sense, cannot be cured by consumers' benefits. They are an appropriate occasion for unemployment insurance, but the insurance will have no stabilizing effects.

On the other hand, benefits to all persons unemployed because of depression would reach farther than unemployment insurance, since it would be unaffected by previous contribution or by length of unemployment period.

In short, payments to all unemployed because of depression would be both more and less embracing than unemployment insurance as such—less, because meeting only one kind of unemployment; more, because of covering greater numbers of persons.

Even then the coverage would not be precisely what is wanted. Workers still employed but with diminished incomes would get no aid, nor would other persons whose incomes are reduced by depressions (unless they happened to be unemployed), such as the recipients of rents, dividends, profits, and so forth.

A method that would meet those objections would be to distribute benefits to all persons losing income by the depression. There is no simple method of arranging this, but, on the assumption that the injury is widespread, a roughly proportional benefit could be paid by reducing all taxes and financing an equivalent volume of government expenditures by borrowing. This method would restore, to whatever degree was considered feasible, the purchasing power of all taxpayers, without at the same time canceling out the benefits by reduction in government expenditure.

These results could be accomplished by a system of flexible taxes, with alternate deficits and surplus of the federal budget. In depression, tax rates and tax collections would be reduced; in expansion, and especially as the economy approached high levels of employment, tax rates and tax collections would be increased. Expenditures would outrun revenues in depression, creating a deficit, and would fall below revenues in expansion, creating a surplus. Over the period as a whole, theoretically, the budget would be balanced, the surpluses of the one period being used to wipe out the deficits of the other.

With a federal budget of 30 to 40 billion dollars the revenues of government from taxation have come to be of such substantial size as to have important consequences on the economy as a whole. Not only variations in the general level of taxes but the way in which the structure of taxes is arranged can have reactions on the effective operation of the economy. Changes in the general level of taxes serve to change pro rata the disposable income of society as a whole. Modifications of the tax structure tend to affect the volume of consumer expenditures. Sales taxes and taxes on the lower incomes in general will affect consumption substantially. Taxes on the upper levels of incomes will have more effect on saving and may affect investment. The same is true of taxes on the excess profits of corporations.

Built-in flexibility

Some change in the level of tax yields results automatically from what is sometimes called "built-in" flexibility. This result arises partly from changes in the tax base moving in the same direction as changes in the national income, partly from changes in the average rates of taxes brought about by progressive taxation. As a consequence of the operation of these two factors tax yields tend to rise and fall more than in proportion to the rise and fall of national income. Thus in the case of progressive income taxes, as the national income rises the incomes of more people rise above the exemption level, and the incomes of those taxed move into higher tax brackets. Corporation taxes, even without progressive rates, vary more widely than national income, owing to the excessive variation of profits between good times and bad.

Thus built-in flexibility reduces the amplitude of fluctuations of disposable income, or income after taxes. It is estimated that for the tax structure as a whole, in recent years, built-in flexibility offsets perhaps one-third of the increase or decrease of income caused by changes in investment expenditures.[6] This means for example that a fall (rise) in the national income of 10 billion dollars would, other things being equal, create a government deficit (surplus) of 3.3 billions.

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[6] R. A. Musgrave and M. H. Miller, "Built-in Flexibility," *American Economic Review*, March 1948. See also A. G. Hart, *Money, Debt and Economic Activity* (New York: Prentice-Hall, Inc., 1948), pp. 476–479.

Some approach to stability could therefore be made without any changes in tax rates, and without the time-consuming processes involved in Congressional deliberations over tax policy.

Built-in flexibility is the basis of the budgetary proposals of the Committee on Economic Development. The Committee proposes that federal tax rates be set so as to balance the budget at an agreed high level of employment (say 93 per cent of the labor force) and to yield a surplus when employment rises above and a deficit when it falls below this figure. Once set, rates would be left alone, except for major changes in the economic picture. With a labor force of 60 million the budget would be balanced with unemployment at 4 to 4.5 million persons.

From the standpoint of stabilization, the CED proposals are an improvement over the policy of balancing the budget year in year out, irrespective of the state of the economy. A balanced budget tends to cause tax rates to fall in prosperity, and rise in depression, accentuating rather than reducing the fluctuations of the economy. The CED proposals with fixed rates cause tax yields to rise in prosperity, fall in depression, thus tending to reduce the fluctuations in the economy.[7]

They have the further advantage that they do not have to be concerned with the difficult problem of forecasting. No person or commission has to decide, for example, whether a recession is here. There is no period of nervous hesitation waiting to see whether what may be only a temporary easing off of activity is to be construed as a genuine downturn. There is no danger of mistaken forecasts, so that orders to ease taxes are given when taxes should have been maintained.

Flexible tax rates

Despite these advantages, it is arguable that built-in flexibility, with fixed tax rates, is not enough. It has not been sufficient to cope with the problem of postwar inflation. It may be even more inadequate to deal with periods of deflation. The speed with which cumulative contractions develop may call for more extensive measures, and a flexible system both of tax rates and tax apportionment.

Under a flexible tax system, not tied to fixed rates, the govern-

[7] *Taxes and the Budget* (New York: Committee on Economic Development, 1947).

ment could adjust its tax program so as to make for the greatest stability of consumer income. It could raise tax rates in general on expansion, and lower them in depression. And it could vary those taxes in particular that are best adapted to the purposes of stabilization.

For example, if tax rates in general are lowered to meet a depression, some part of the benefit accrues to classes with relatively low propensity to consume. If the savings from these increased incomes are offset by equivalent investment no ill consequences will arise. But if the savings are not so offset, the efficacy of tax reduction is by that degree reduced. This would mean that a greater reduction of taxes (and therefore a greater deficit) would have to be made in order to get any given increase in effective demand. Those who fear these consequences would favor such reduction of taxes as would add to the incomes of the classes with the higher propensity to consume.

The taxes that have the widest coverage and would therefore most quickly affect the general levels of consumption are (1) the personal income tax and (2) excises and sales taxes.

As to personal income taxes Hansen holds that 50–60 per cent of the receipts from the federal income tax in the postwar period will come from the standard rate, i.e. the rate applied to the first bracket of taxable income.[8] Any change in this rate will therefore affect all income tax payers, and through current deduction at the source, will affect them immediately. It is estimated that a ten percentage point decrease in the first bracket rate might raise the annual rate of consumer expenditure by over three billion dollars; an additional 10 point variation in the second bracket would bring the increase to 4 or 5 billion dollars.[9] Similar effects can be had by changing the levels of exemptions, raising them to lower tax yields, lowering them to raise tax yields. The personal income tax, therefore, could be a potent instrument for stabilizing the mass purchasing power of the community.

Excise taxes, sales taxes and other taxes on consumption would seem to offer similar advantages. They lie on the mass of the consumers, and they could be made readily adjustable to cyclical

[8] See A. H. Hansen, *Economic Policy and Full Employment* (New York: McGraw-Hill Book Company, Inc., 1947), Chapter XI, Tax Policy.

[9] R. A. Musgrave in *Post War Economic Studies,* No. 3, Washington, Board of Governors, Federal Reserve System, p. 43.

contractions or expansions. They have the further advantage that they reach all consumers, including those who lie below the level of the income tax. Hence reduction in their rates at the onset of a contraction will add income in quarters not affected by reduction in the income tax. As they have come to be a major source of income for state and local governments, deliberate manipulation of their levels by these bodies on some uniform plan would bring an important influence into the field of stabilization.

A tax commission for prompt action

As prompt action at the appropriate time is essential to the effectiveness of tax change, particularly reduction to meet an incipient recession, it would be desirable to have a Tax Commission set up, similar to the Federal Reserve Board of Governors, empowered to lower or raise tax rates, say at monthly intervals, within maximum and minimum rates, and under general regulations set up by Congress.

This commission, then, would be empowered to lower the appropriate taxes on the advent of recession. If it was desired to avoid the fallibility of forecasting, or the malign influences of politics, such adjustment could begin upon the movement of some appropriate index; as when the Federal Reserve Board's Index of Industrial Production fell by some specified percentage below some assumed normal or average. In periods of expansion when spending power had reached such levels as might threaten to cause inflation it would be the duty of the Board to raise the rates of the taxes involved, with the aim of recovering by such taxation the funds to pay off the deficits incurred in the period of contraction. If there were no chronic tendency to depression, and particularly if the economy was on a gradual upward trend of output and income, the deficits of the one period should on the average be removed by the surpluses of the other.

It may not be easy to persuade the Congress to delegate to a Commission the power to operate a flexible tax system. If it did not, and if there were the usual delays in getting legislation carried through, it would seriously impede the effective operation of these devices. Indeed, they might do more harm than good. Measures at the wrong time might be worse than useless. Even if

Congress were more prompt in its actions, it might be averse to tax increases in periods of boom when such measures would be decidedly unpopular among their constituents. How difficult this might be is shown by the insistent Congressional urge to lower taxes in 1946–1947 in a period of rising prices and substantially full employment. Indeed, tax reduction, always a popular slogan, can be defended in Congress even in a period of inflation on the ground that recession is just round the corner, when lower tax rates would obviously be the appropriate policy.

Payments to consumers other than tax remission

As an alternative to reduction of taxes, government could make payments to consumers in various direct or indirect ways, financing them from loans. Such payments could take the form of subsidies on wages, either paid direct to producers, or to the employees. These would enable producers to maintain output where otherwise they would be led to reduce it. Or subsidies could be paid to the producers of necessities so that prices could be lowered. Food-stamp payments to necessitous consumers would cover part of the field. Or the government could make some kind of per capita payments to all consumers.

As an effective means of stimulating consumption, direct or indirect payments to the lower-income groups would be superior to payments in general, which are subject to a higher degree of "leakage."

Theoretically, the mere expectation that these payments to consumers would be made might so stabilize business as to make the burden of the payments very small. J. H. G. Pierson, who is an advocate of payments to consumers, has proposed that the government estimate the volume of consumer spending, which added to investment expenditures in any period would be sufficient to bring about the desired level of employment (he aims at "full employment," but "high employment" would be an alternative) and then guarantee that consumer spending would be maintained, by appropriate government policy at that level. This guarantee would be met, if needed, first by expanding appropriate public works projects held in reserve for the purpose and if that did not suffice by direct payments to consumers either by reduction of

taxes, or by some kind of consumer dividend. But he hopes that the guarantee would so encourage investment that it might never have to be fulfilled, save in minor degree.[10]

There is something seductively attractive about this kind of stabilization that entitles it to serious consideration. It is simple, it is direct, and it works with the least possible delay. Unlike monetary management, which, in the last analysis, is a scheme to *induce* businessmen to regularize their expenditures, it is not likely to suffer from the embarrassment of offering funds to people who do not want them. Nor is it likely to be bothered with the delays and conflicts too often found in public works. For, after all, the real purpose of public works is quite often not the utility of the projects, many of which are hastily set up and often of little lasting value (like public buildings in an economically declining locality), but quite frankly the purchasing power which is, as it were, incidentally put into the hands of otherwise idle people. Advocates of consumers' payments claim that this can be accomplished more quickly and more effectively by their proposals.

Furthermore public works expenditures run the risk of violating the canons of efficiency, devoting resources to projects of smaller benefits than would be derived from output directly demanded by consumers. It may be better in depression to produce post offices, irrigation projects, slum clearance, and so on, than do nothing, but it might be better still to supply the people with automobiles and movie theaters and houses and all the things they normally want, and which private enterprise would be glad to produce as long as demand for them is forthcoming. Public expenditures supply the people with goods the government thinks they want. Perhaps it would be better to let the people decide. Consumer payments, whether by tax reduction or otherwise, enable them to do this.

Against these advantages of payments to consumers, via tax reduction or otherwise, over government expenditures in goods and services, must be set one disadvantage. Any increase of government expenditures will cause a greater initial increase in demand than will a similar reduction in tax yields. When government

[10] J. H. G. Pierson, "Underwriting Aggregate Consumer Spending," *American Economic Review*, March 1944. See also his book, *Full Employment* (New Haven: Yale University Press, 1941).

incurs a deficit to build public works, for example, the demand for goods and services is increased by the full amount of the government expenditures. But when tax yields are reduced by a similar amount, while consumers' incomes are increased pro rata, it does not follow that consumers' expenditures will so increase. They would, if the marginal propensity to consumer were unity. As this is not likely to be the case, save in the lowest income levels, general reduction of taxes will bring about something less than equivalent increase in consumers' expenditures; and a good deal less in the higher income levels.

Thus the "leverage" of tax reduction is smaller than that of equivalent increase in public expenditures. A billion dollars of public expenditures will cause a greater increase in effective demand than a billion dollars reduction in tax yield. Or to put it another way, to bring about a given increase in effective demand will cause a greater deficit if taxes are reduced than if public expenditures are increased.[11]

Tax incentives for private investment

The great reduction in private investment that characterizes depression would seem to point to the advisability of some stimulus in this quarter as well as in consumption. Some economists, indeed, seem to regard the problem of private investment as one that can be left to itself, provided public expenditures plus consumption expenditures can be stabilized at high levels. They argue that, apart from exogenous changes, such as new technological processes that are not readily controllable, private investment is substantially determined by the volume of consumption and public expenditures. If effective demand in these two areas is maintained at a high level, private investment will be sufficiently stabilized.

Granting that private investment would be more stimulated by a higher stable level of consumption than by a fluctuating and lower level, still this attitude may be too optimistic. For one thing, the variation of investment due to innovation and tech-

[11] See R. A. Musgrave, "Fiscal Policy, Stability and Full Employment," in *Post War Economic Studies,* No. 3, Washington: Board of Governors of the Federal Reserve System, 1945.

nological change may itself be substantial enough to make for instability of business expenditures. Indeed, investment spurts from such causes may be a prime source of our cyclical behavior. The best that can be achieved by stabilization policies may therefore lie in compensating for these probably unavoidable fluctuations rather than in hoping to remove them by direct attack.

Furthermore the expansion of public expenditures and the methods used to encourage consumption may serve to discourage rather than encourage private investment. The public deficits to which these policies lead may alarm the business community. If the tax structure is biased to the disadvantage of the higher levels of income the sources of investment funds may be adversely affected. Economic prosperity, as Keynes has noted, is excessively dependent on a political and social atmosphere congenial to the average businessman; and the atmosphere of stabilization with its unfamiliar and unorthodox aspects may be distinctly uncongenial.

It may be, therefore, that private investment itself may need some encouragement as well as private consumption, in times of depression.

Fiscal policy would seem to be an appropriate instrument for this purpose through modifications of business taxes, or of the taxes on these levels of income from which investment is likely to be made. The latter alternative involves extending to the upper levels of income some part of the reduction in taxes granted to the lower. In respect to business taxes, perhaps the best device would be to abolish the corporation income tax on all distributed income, retaining it only on that part of undistributed income not invested in productive assets. Or the invested income could be taxed at lower rates, at the discretion of the taxing authority.

If the problem were partly one of overcoming the abnormal risks of investment in time of threatened depression, a useful device would be to permit losses in any given year to be offset against gains in preceding or later periods. If this carryover were to reach ahead say six years and back two, established business would be able to proceed more readily in times of more than average risk. This would, however, not be a remedy for the losses of new enterprises with no record of past profits to offset current losses.

Nor would it be practicable for the Treasury to make refunds for losses, against which earlier gains are not available; and later ones problematical.

These devices may be useful in encouraging investment in depression; but it is probable that their effect in increasing demand via investment will not be as great as the effect of measures designed to increase consumption. The flow of investment after a period of expansion tends normally to slow down, as the favorable expectations on which it was based gradually fade away; and when this occurs reduction of taxes, like reduction of interest, may be impotent to overcome the hesitancy of discouraged entrepreneurs. Hence it may well be that the most that can be done for a time lies in compensatory measures via public expenditures or encouragements to consumption.

The goal of full employment

The last few years have seen a sharp increase in interest in the problems of stabilization. Among economists this springs from the challenge thrown out by Lord Keynes. In broader circles it is the war and its implications which is the main source. The high records of production achieved during the war indicate that if we suffer from unemployment it is not because we do not have the productive capacity to put our people to work. And it is searchingly asked why the great potentialities of our productive system, which have now been disclosed, cannot be harnessed to peace production. Or is the way of life of democracies, for which it would seem we have been fighting, necessarily to involve involuntary unemployment, and a level of national income below what would appear to be the level of our capacity?

Thus the chief economic problem of our time comes to be the problem of Full Employment, and the economic literature of our day, other than that devoted to the problems of war, is largely concerned with what must be done to reach and maintain the highest possible levels of production and employment. Thereby the emphasis has, to some degree, been shifting from the problem of stabilizing cyclical fluctuation to the related but not identical problem of full employment. Whereas the aim of cyclical stability is to reduce the amplitude of fluctuations in booms and

slumps, our present concern has come to be how to maintain the high level of booms. Even this, perhaps, is not enough. What we are seeking to reach and maintain is "full employment." [12]

Under these circumstances, the aim of government policy must be to prevent any falling away from full employment. And if by mischance we fall below that desired level, the full forces of monetary and fiscal policy must be sent into action to bring us back. This would mean that public expenditures must continue to expand, taxes must continue to be damped, monetary policy must continue to be expansionist, as long as the goal of full employment has not been reached.

This may be a much more serious undertaking than the mitigating of booms and slumps that is the aim of cyclical stabilization. There seems good reason to hold that judicious use of the whole arsenal of weapons, monetary and fiscal, available to government, can very substantially reduce the amplitude and severity of cyclical fluctuation, and thereby, without too much breach with accepted opinion contribute notably to the effective operation of the modern capitalistic economy. But to aim at full employment may be setting our sights too high in a free enterprise system.

Inflationary dangers

Two pitfalls lie in the way to full employment. One is the danger of running into inflation before full employment is reached. The other is the inhibitory effect on private investment of a continually rising public debt.

It is sometimes argued as if the result of increasing the volume of effective demand would be a continuous increase in employment up to the level where full employment has been reached. At this point, but not before, any further increase in effective demand can only result in rising prices; i.e., inflation. At that

[12] Full employment does not mean that every person who is able and willing to work is always at work. As long as there are any shifts in demand, or changes in methods of production, there are bound to be persons moving from job to job. As these changes of jobs cannot be instantaneous there will, at any time, be a certain number of persons out of work. There is a minimum below which this cannot be expected to go. Sir William Beveridge puts the minimum at 3 per cent in England. In the United States the minimum has been estimated at 2,000,000 in a labor force of 60,000,000 (including the armed forces) in the postwar period. For England, see Beveridge, *Full Employment in a Free World* (New York: W. W. Norton and Company, Inc., 1945), pp. 126–129. For U.S.A., see Federal Reserve Bulletin, May 1944.

point, output and the supply of factors of production have suddenly become totally inelastic.

But this picture is most improbable. Supply factors do not become inelastic of a sudden; they exhibit inelasticity in gradual stages. Inelasticity may emerge early in some fields, later in others; at the end, inelasticity has become general, but some inelasticity has been appearing here and there progressively.

Under these circumstances there is danger lest the force of spending be dissipated in price rise before full employment is reached. There are bottlenecks in respect to labor, plant, and materials, which will force prices up in various quarters while unemployment and unused capacity still exist in others. Strong labor organizations can create these bottlenecks, and direct the expanding expenditures into higher wages. If these are translated into higher prices, a wage-price spiral is begun, which is a serious inflationary threat.

Sir William Beveridge has conceded that unwise sectional wage bargaining might set up just such a spiral and endanger the whole policy of full employment. He hopes that the good offices of the central labor organizations might lead to wage bargains and arbitration that will have regard to their effects on the whole economy.[13]

Keynes makes a similar observation. Pointing out that what he calls absolute inflation takes place whenever an increase of effective demand occurs in a position of full employment, he then notes that what he calls semi-inflation "having some analogy (though a very imperfect one) to the absolute inflation" may arise before full employment is reached. Equipment does not necessarily have elasticity of supply. Wage earners in favorable positions will want to use their power to get higher wages. So as output increases, a series of bottlenecks will be successively reached with a resultant rise of prices.[14]

Or to put it otherwise, any increase in effective demand will spend itself partly in raising costs and prices, and this may be a substantial barrier to full employment as a goal of fiscal policy.

Professor Hansen notes that if the supply curves of output in

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[13] *Full Employment in a Free Society*, pp. 198–201.

[14] See J. M. Keynes, *General Theory of Employment, Interest and Money*, pp. 294–303.

general slope upward considerably before the point of full employment is reached, "the matter is pretty serious." He hopes that bottlenecks will be limited to a few industries, where the problem would be manageable by overtime, drawing on the minimum volume of "unemployed" available even in full employment or upon the labor fringe not normally in the labor market, and similar sources used during the war.[15]

All this means that stabilization, like any other good, can only be had at a cost. It would presumably be possibly to break these bottlenecks of capital and labor, if society were interested in doing so. Sir William Beveridge seems prepared, if necessary, to enforce compulsory mobility on labor when needed to allocate labor supply more efficiently. And Professor Hansen suggests that price increases, due to inelastic supply situations, might be corrected by a peacetime office of price research, to be required to report to the President and Congress on proposed price increases, which would not be permitted until an investigation had been made. Publicity, it is true, not coercion, should be relied on to enforce a rational price policy; but this may be only the velvet glove.

A free enterprise society will therefore have to decide just how much stabilization it will be willing to pay for. And it may be that some less ambitious goal than "full employment" will have to be set up.

The problem of the public debt

There is a second problem arising from a "full employment" policy, namely the problem of a continuous growth in the public debt.

It is implied in the use of fiscal measures for cyclical stabilization that the deficits incurred in depression will be wiped out in expansion, so that the public debt will not be continuously increased by stabilization measures as such. This pleasant assumption may not be justified if the government aims at full employment.

The very large volume of savings to which the high incomes of a fully employed society gives rise threatens to outrun investment outlets, except in the most favorable conditions; and under such circumstances only specific interference by the government would

[15] Op. cit., Chapter XX, "Inflation Risks Under Full Employment."

prevent output and incomes from falling to lower than full employment levels. It might be that fiscal policies designed to raise the income shares of the lower-income levels, with taxes steeply progressive and social services of one kind and another adding to the income of those in the lower groups, would so raise the propensity to consume of the community as to enable savings to be fully offset, on the average, by investment expenditures. But short of this result the deficit expenditures of the government would be continuous and the public debt would rise indefinitely.

This increase, however, is not necessarily an evil. An internal debt is not a burden like an external debt. When a country's debt is held externally, interest and amortization payments must be paid to persons living in other countries, and although this may immediately take the form of money, it eventually must take the form of exports of goods and services. Thus the debtor country must produce an exportable surplus, which being sent abroad is at the expense of consumption at home. The debtor country is currently poorer in goods and services by virtue of the debt. It is a real sacrifice for the economy.

An internal debt on the other hand involves no such burden. The payments of interest and principal out of taxation increase the incomes of bondholders at the expense of taxpayers. Some people can consume more, some must consume less. The total income of the community is unchanged, except for indirect effects. This is not to say that there is no problem involved. There is a problem. It is a transfer problem. Payments flow from taxpayers as a whole to bondholders as a whole. These transfer payments could be very burdensome. If for example, one group of the community held most of the bonds, and another group paid most of the taxes, there would be a shift of income from the latter to the former group. If the taxpayers were the low income classes and the bondholders the high income classes, these shifts might seriously reduce the levels of consumption. If the taxpayers were the productive classes, as businessmen, farmers, and wage earners, and the bondholders were unproductive, the debt would be a sharp burden on productive effort. It was this possibility that caused early economists, beginning with Adam Smith, to deplore the growth of public debts.

The burden of transfer could be reduced to a minimum by the

widest distribution of the public debt among all classes of the community. The nearer we get to a situation where the debt is held in the same proportion to income as the liability for taxes, the lesser becomes the transfer problem as such. But under any probable distribution of the debt, transfer payments will be substantial.

But all burdens are relative, and the debt burden is no exception. If the income of the community is rising, any debt will be more easily borne. The money income of the United States has been rising at approximately 3 per cent per annum. If the debt rose no faster it would be no greater relative burden from year to year.

If, further, the public expenditures made possible by the debt were "productive" in the sense of adding to the productive capacity of the nation (using this in the broadest sense to include the productive efficiency of the people), then the increase of debt would be no economic menace. One must allow, too, for the stimulating and encouraging effects of full employment as such upon enterprise. In any case, if we can prevent recurrent depressions, with the wiping out of the values of private debt that go with them, the "burden" even of an increasing public debt may well be worth the cost.

But like other aspects of stabilization policies, the psychological consequences of any persistently increasing debt have to be taken into account. Indeed they may be decisive. The business community is likely to be but slowly educated to unorthodox practices, and even if it can be induced to accept cyclical rather than annual budget balancing, a persistent rise in the public debt may be alarming. If it fears that public credit may be impaired, or that continuance of public deficit expenditures may bring about inflation, it may be unwilling to proceed with private investment as vigorously as it otherwise might.

Thus effective limits to expansion may be reached before the goal of full employment can be attained.[16]

[16] See J. M. Clark, "Appraisal of the Workability of Compensatory Devices," in *Readings in Business Cycle Theory* (Philadelphia: The Blakiston Company, 1944).

24

WAGE POLICY

IT HAS ALWAYS BEEN CLAIMED for an economic system based on free enterprise that it and it alone is capable of spontaneous adjustment to the constantly changing data of economic life. Shifts from one industry to another, expansion here and contraction there, readjustments of output to changes of demand and to changes in methods of production and the relative availability of the productive factors must be brought about continuously, rapidly, and spontaneously if balance is to be maintained and production continue uninterrupted.

The problem of "rigidity"

It is a commonplace of economic reasoning that a system of free enterprise where no values or prices are subject to control, but all are free and quick to react to changing conditions, is best adapted to this necessity of constant adjustment.

But evidence is piling up that this flexibility on which adjustment depends is being reduced, and that some of the values and prices are tending to become more rigid as time goes on. This rigidity has always been present in the important element of contract interest rates. These are fixed charges, which, although to some degree flexible by negotiation and by the more painful process of bankruptcy, have been accepted as a relatively rigid element in the structure of costs. But other values are moving toward inflexibility. We hear much these days of inflexible prices, and we are told that many of our industrial prices are "administered" so as to vary within narrower limits than they otherwise would and less than the needs of flexibility seem to demand. Particularly have wages tended to become less flexible. That they have long

since been to some extent less flexible than prices is, of course, well known. They rise and fall less than prices and are less quick to move either up or down. This relative rigidity is most marked in depression, and it may well be that developments are increasing the strength and scope of this tendency.

Whatever the relative importance of this tendency to rigidity in contrast to the flexible elements in the economic structure (and it is well to be reminded that this cannot be measured with our present knowledge), to the degree that it exists it will interfere with the self-adjusting process which is supposed to be the great virtue of free enterprise. Rigidity of prices and wages could be particularly dangerous in depression, when readjustments are inevitable and, when delayed, serve only to prolong the period of stagnation.

What are the causes of this rigidity? What consequences does it have upon cyclical fluctuations of business? What policy should be followed to restore greater flexibility if such flexibility is desired?

The causes of rigidity of wages

Wage rigidity works both ways. It makes wages rise less than proportionately to prices in good times, fall less in bad times. But it is particularly strong in bad times, when various reasons conspire to create stubborn resistance to wage reduction. What are the reasons for this?[1]

1. The first is the general preoccupation of workers with the standard of living. Workers are not businessmen engaged in making money; they are primarily human beings making a living. They have never been willing to regard their labor as a commodity subject to the mechanical operation of supply and demand. Fair wages, they argue, are not market-controlled wages but rather wages that will ensure a just standard of living. Hence workers strive for wages that gradually rise, rather than wages that rise and fall with the vagaries of industrial fluctuations. They are willing to have them go up, but not go down. This attitude, which has become almost traditional, is increasingly defended as appropriate social philosophy in a democracy wherein the general

[1] See A. C. Pigou, *Industrial Fluctuations*, 2nd Edition (London: Macmillan and Company, Ltd., 1929), Part I, Chapter XX, "The part played by rigidity in wage-rates."

welfare of the people demands stabilization of wage income. Although perhaps the more appropriate way of achieving this would be to stabilize the whole national income, in the meanwhile this philosophy finds expression in the demand that wages become a fixed charge on industry, like interest.

2. A second cause of rigidity is the common conviction among workers that the demand for labor, particularly in depression, is inelastic. If this conviction is true, any given drop in wage rates will produce a less than proportionate increase in the demand for labor and a smaller aggregate volume of wage payments. Resistance, therefore, to wage reductions is, from labor's point of view, a good policy. It is, of course, possible that wage earners are wrong, and that the demand for labor even in depressions is elastic, particularly for specific industries. But ill-founded or not, there the belief is, like the possibly equally ill-founded belief of industry in the inelastic depression demand for its commodities. As long as it is there, it makes for rigidity.

3. Thirdly, resistance to reduction of wages is stimulated by the fear that wages are easy to get down but hard to get up. Once wages are reduced, only prolonged pressure can get them up—pressure which at the best makes for friction and at the worst leads to costly strikes. This fear is the counterpart of that fear of "spoiling the market" which, as is pointed out later,[2] plays such an important part in causing industry to oppose price reductions.

4. A fourth cause is the existence of unemployment insurance, work relief, or any other alternative to money wages that society has to offer. The "short-time normal" to which wages might be expected to fall in depression will clearly depend on the alternatives open to workers. If the alternative is starvation, wages may fall very low; if the alternative is insurance payments or work relief, and so on, wage levels will be supported to that degree. The emergence of these alternative payments during the last two or three decades has led some observers to attribute to them the apparently increasing inflexibility of money wage rates during this period. It has been a common argument that the prolonged stagnation of English industry since the First World War and the inability to reduce the volume of unemployment can be traced largely to this source.

[2] See pp. 490–491.

5. Finally, rigidity of wage rates in depression has been supported both in theory and in practice by the spread of purchasing-power theories of wages. The growing tendency to emphasize that wages are not merely a cost, but also the main constituent of effective demand for commodities, has given added strength to resistance to wage cuts. It has become the accepted theory of organized labor and has gained wide support in academic economic circles, especially under the influence of Keynes, who has ingeniously rationalized the instinctive opposition of labor to wage reduction.

These reasons indicate what powerful influences make for rigidity of wages and give a measure of the difficulties which any policy of greater wage flexibility must be prepared to face. With this in mind, we will now examine the effectiveness of various wage policies designed to make for more stable production.

Wage policy in cycles

The problem of wage policy is complicated by the fact that wages are both an important element of cost and the main source of effective demand.

Looking at wages from the standpoint of cost, rigidity of wages appears to be a force increasing the amplitude of cyclical fluctuations. By lagging behind price changes both on the rise and the fall, they will, to the extent of their importance, open up abnormal areas of profit and loss. On the upswing they encourage undue expansion; on the downswing they force undue contraction. As rigidity of wages is a conspicuous feature of modern industrialism, it is a factor making for instability of output. Pigou gives it a weight of one-eighth in the aggregate influences determining the amplitude of cyclical fluctuations.[3]

From the point of view of costs, therefore, the appropriate policy would aim to make wages more flexible. What seems to be needed is stability in the ratio of wages to profit; when this ratio falls, as in booms, excessive expansions are encouraged; and when it rises, as in slumps, the result is undue contraction. Raising wages earlier in periods of expansion would prevent profit inflation and put brakes on the undue enthusiasm of entrepreneurs.

[3] A. C. Pigou, *op. cit.*, 2nd Edition, 1939, p. 225.

Lowering them more readily in recession would help to adjust costs to prices, restore the profitability of enterprise, and encourage the maintenance of normal levels of activity.

But wages are not only an element of cost. They are, as underconsumptionists hasten to point out, the most important source of purchasing power. As such, their variations are bound to modify the profit expectations of entrepreneurs, not through the effect of wage rates as cost, but through the influence of aggregate wages on effective demand and hence on the sales expectations of the producer. As the later influences may be favorable when the former are unfavorable, or vice versa, wage policies viewed from one angle may demand different, if not completely opposite, measures from those seen from the other angle.

Thus, if the cause of crisis is held to be a level of output which has outrun the purchasing power of the masses of the people, proper policy in expansion demands steady increases in wages. Only in this way will a continuous foundation be laid on which expansion can be maintained. Where improvements in technology have been made, it is particularly imperative that wages rise proportionately. Otherwise, even with stable prices, as in the years 1926–1929, abnormal profits will emerge, an investment boom will be propagated, and a crisis will impend.

But it is not in order to put brakes upon the producer by raising his costs that wage rise is necessary. What is needed is a steady increase in consumer purchasing power. Raising cost serves merely to bring expansion to an early end, which, considering that even in boom times equipment is rarely fully used, seems to condemn us all to a much lower level of real income than our technological advantages should enable us to enjoy. But raising purchasing power encourages activity to go on. Instead of giving us the unhealthy kind of boom which inevitably ends in crisis, it gives us steadily rising prosperity, limited only by our capacity for production.

Oddly enough, both those who think in terms of cost, and those who think in terms of effective demand, could logically advocate rising wages in expansion, the former to keep expansion in bounds, the latter to maintain output at the highest possible levels. In the one case brakes are applied to prevent levels of expansion that

are regarded as impossible to maintain. In the other, barriers are removed that prevent us reaching levels justified by the state of the industrial arts.

Disagreements as to wage policy in depression. But if, although for different reasons, these two groups advocate superficially similar wage measures in expansion, all agreement disappears when depression comes. Considerations of cost demand more speedy reduction of wages in depression, but considerations of purchasing power can do so only under very specific conditions that may, in fact, not be present.

Those who think of wages as cost imply that the demand for labor as a whole has an elasticity greater than unity. Were this so, reduction of wages would involve no conflict between our two points of view, for not only would cost per unit of output be reduced, but aggregate wages, and therefore, aggregate purchasing power of the workers would increase.[4]

But this assumption may not be justified. Various accompaniments of reduced wages in depression may falsify it completely.

1. In the first place, the reduction of wages may be followed by a reduction in prices. Were this to happen, the gains to employers would be canceled out and the forces of deflation continue. Even at the best, the total active purchasing power would not increase, and since some of the gains from falling prices go to bondholders and others of the *rentier* class, whose tendency to save rather than to spend may immobilize at least a part of their gains, there is a strong probability that aggregate purchasing power in use would fall. This result is not an encouragement to maintenance of output.

2. In the second place, initial reductions in wages tend to encourage the expectation of further reductions, causing entrepreneurs to postpone commitments until wage levels should have reached their minimum. There emerges, for short periods of time, a "perverse elasticity" for labor, whereby reductions in wages decrease rather than increase the demand for labor and rapidly reduce the aggregate of wage payments. If there could be a single reduction of wages that could be considered final, this outcome might be avoided. Such a reduction could hardly be

[4] Cf. P. H. Douglas, *Controlling Depressions* (New York: W. W. Norton & Co., Inc., 1935), pp. 213–214.

accomplished save by the dictatorial orders of the government, not available in systems of free enterprise.

3. If, despite the temptation to do so, prices are not reduced with the reduction of wages or reduced with a time lag so that there accrues an additional profit to entrepreneurs, even then there may be no expansion. The entrepreneur, surrounded as he is by the uncertainties any depression produces, may prefer not to invest these profits but to pay off bank loans or put his business in a more liquid condition. Should he decide to do this, the total effective demand for commodities is most likely to be reduced, since resources are transferred from wage earners, who would presumably have spent them, to entrepreneurs, who under these assumptions would not. When this result happens, the profits themselves turn out to be illusory.

4. It is possible, indeed, that reduction in the wage and price level will correspondingly reduce the demand for money, create a margin of unused credit, and so bring down the rate of interest, and that this will give the needed encouragement to expand. But a lower rate of interest, as we have seen, may not be an effective stimulus; and even if it were, it could be more easily brought about by the deliberate operations of the banking system than by the reduction of wages with all its attendant uncertainties and difficulties. Wage reductions are strongly resisted by workers, and their resistance not only adds to entrepreneurs' costs, but may be accompanied by so much popular discontent as to weaken general confidence, thereby upsetting any influences that might be favorable.

Keynes comes to the aid of wage maintenance. These arguments against reducing wages in depression have been strengthened lately by the powerful support of J. M. Keynes, whose *General Theory of Employment, Interest and Money* may be said to be devoted largely to the proposition that "the volume of employment is uniquely correlated with the volume of effective demand measured in wage-units." Mr. Keynes puts his argument for wage maintenance as follows: [5]

Reduction in money wages can only be favorable to entrepreneurs provided the total volume of effective demand is maintained. With reduced wages in general, this result can happen only either

[5] Keynes, *General Theory,* Chapter 19, "Changes in Money Wages."

(a) if the additional income thus accruing to others is consumed (that is, if the community's marginal propensity to consume is unity), or (b) if not consumed, it is invested by entrepreneurs, which in turn can happen only provided their expectations are improved (that is, that the schedule of the marginal efficiency of capital is raised relatively to the rate of interest).

These conditions do not make a very promising picture. If prices are reduced, additional income largely accrues to the *rentier* class, whose standard of living is relatively inflexible. If prices are not reduced, additional income accrues to entrepreneurs, who are more likely to save than consume. On either count, consumption seems likely to suffer. This outcome puts the burden on investment, which will expand only if expectations are made relatively favorable. As the considerations already advanced indicate that the marginal efficiency of capital is not likely to rise, about all that is left is the possible fall in the rate of interest, which, as already pointed out, is likely to be more effectively brought about by the banking authorities. If the entrepreneur foresees all these results, he will not be tempted to increase his output. If he does not foresee them but acts on optimistic expectation engendered by reduced wage costs, then he is almost certain to be disappointed with the outcome and to be led to reduce his employment to its former level.

Can these policies be reconciled? We have, then, two quite different wage policies to choose from, as a means of reducing depression. On the face of it, one or the other of these policies must be wrong. If it is good economics to lower wages in depression, it cannot be right to maintain them. Yet it may be that there are elements of truth in each and that different circumstances may justify different policies. There are cycles, perhaps minor ones, in which readjustment comes quickly, and revival emerges as a result of low interest rates and the consequent stimulus to investment. In these cycles, the demand for capital is elastic, and it seems possible that reductions in wages would add to the stimulus.

But there are other cycles in which depressions seem prolonged and serious. Deflation continues unduly, even after reasonable readjustments are made. Confidence has disappeared, and the demand for capital has become completely inelastic. The symptom of this is the total inability of a prolonged period of low

interest rates to rouse enterprise out of stagnation. In a cycle of this sort, wage reduction serves merely to reduce the volume of active consumption and can have no other result than to prolong the depression. In fact, elasticity of the aggregate demand for labor may be so low that very severe reductions in wages may be necessary to bring about adequate re-employment of labor. Doubtless in any depression, no matter how severe, there is *some* level of wage rates that would restore full employment, but, if this level is so low as to violate the moral standards of the community, it must be ruled out as impracticable. That such a situation might occur is indicated by the similar experience of interest rates which, in depression, may approach zero without encouraging a revival in the demand for capital.

Practically, it is probable that society has no real choice. Whether for good or bad, wage cutting as a means of improving the wage-profit ratio is ruled out by political considerations. Wage reduction meets with such serious resistance as to be no longer a feasible policy. In England, public opinion takes this for granted. And in the United States it is coming to be the case. This being so, other methods of meeting depression will have to be relied on. Methods likely to increase aggregate demand, such as public expenditures, or other encouragements to private investment than lower wages, have come to occupy the principal place.

Raising wages for recovery

Looking on wages as purchasing power, then, causes one to favor a wage policy of raising wages in prosperity and maintaining them in depression. If, however, wages have not been maintained in depression, then an extension of the policy indicates that wages should be raised to bring about recovery. A depression can end only if somebody begins spending money. Entrepreneurs will not produce without a market; and markets cannot be there as long as wage disbursements are unduly low. Therefore, the right thing to do is to raise wages in industry in general. The increased purchasing power this generates constitutes the market that is needed for recovery and for encouraging entrepreneurs to expand production and employment.

This view of things finds great popular support. It is the fa-

vorite panacea for restoring good times. It is accepted readily by politicians and enthusiastically by labor leaders. It played an outstanding part in the economic policies of the New Deal, which was greatly influenced by underconsumption points of view. It found concrete expression in the wage policies of the National Industrial Recovery Act (NRA), in the Wages and Hours Act establishing minimum wages and maximum hours, and in the aid given by the New Deal to the revival and expansion of labor unions. It was the background of the popular demand, to which the A. F. of L. gave its official blessing, for a 30-hour week in industry in general. This proposal, although ostensibly a means of creating more jobs, is really a means of increasing the total disbursements to labor, as is shown by the provision that hourly wages should be sufficiently increased to maintain the prevailing weekly earnings for labor.

The idea of bringing about recovery by raising wages, considering that this must be at the expense of entrepreneurs, seems like lifting oneself by one's own bootstraps. Certainly it would not be easy to find support for this except in relatively unorthodox circles. Nonetheless, because of its great popular appeal and the devotion it has found in some government circles, it deserves detailed examination. For this purpose, let us take the wage policy of the NRA in 1933.

The wage policy of NRA. Everybody agrees, of course, that no individual employer can be expected to raise wages in the hope that he will recoup his outlay via the increased purchasing power of wage earners. There is no reason to suppose that any more than a negligible fraction of his outlay will come back to him in purchases, and even what comes will be delayed. But it is arguable that, if employers in general raise wages, they will, as a body, receive back in sales what they pay out in additions to wages; and that if they could be induced to act together, a wage-raising policy ought to be feasible. With this in mind, the government, through the somewhat authoritative persuasion of NRA, aimed to bring about an increase in aggregate wage payments by agreements with employers to raise the general level of wage rates and lower hours of labor. As the effect of the latter was to encourage an increase in numbers employed, aggregate payrolls were substantially increased. This method was expected to protect

individual employers from the hazard of isolated action and supply the increased volume of purchasing power needed as a basis for general expansion. Most important of all, the increase in outputs that this would occasion, in plants running to only a fraction of capacity, would substantially reduce unit overhead costs and so enable employers to meet the additional wage costs imposed by NRA without reduction in profit and without increase in price—particularly without increase in price, for otherwise real purchasing power could not be effectively increased.

Now, even assuming that the increased volume of wage payments would be promptly spent or otherwise put to active use by the recipients, return of wages in purchases is bound to be delayed. Some of the funds would be used to pay bills or other debts; some of them would go through banks and be delayed in reissue. To producers of consumers' goods, wage outlays would come back very fast. To producers of capital goods, in proportion to their remoteness from the consumer, they may come very slowly. For the producing community as a whole, there would be an unavoidable lag between outlays and receipts; and the question of how the increased costs should be financed in this difficult interval would arise.

NRA wage policy of doubtful value. It is evident that whatever financial means are used they must be such as to add to the total purchasing power in active use. They must come from "new money" obtained through bank credit, or they must be otherwise idle funds. If they come from other active uses, so constituting a mere transfer of active funds from one use to another, they will not add to aggregate spending and will make no contribution to recovery. If, for example, entrepreneurs meet additional wage bills by reducing expenditures on replacement or inventories, cutting down on repairs and additions, letting inventories run down, and so forth, purchasing power is reduced in one place to be increased in another. At the opposite extreme, if employers have idle reserves at banks or can borrow at banks, and make use of these funds to meet wage payments, a real net addition is made to purchasing power. If wage increases are met at the expense of dividends, or, provided arrangements can be made, by reducing interest on outstanding debt, the *active* purchasing power would be increased, if it can be assumed that this proc-

ess shifts resources from slow spenders to rapid spenders, or from those who tend to save to those who are sure to spend.

The prospects of successfully financing increased wage payments from these means do not look very promising. Payments from other current expenditures are of no net value. Payments at the expense of whatever dividend money is available in depression would be small in the aggregate and of doubtful efficacy in any case, as payments from interest and other contract incomes would be also. This situation leaves cash reserves and bank loans as the main resources. As to these, the general attitude of businessmen in depression does not seem favorable either to releasing cash reserves (which they cling to with great tenacity at such times) or to incurring the risk of borrowing at banks for the certain outlays and the very uncertain gains increased wage costs must involve. Hence, business is likely to finance their expense either by reducing nonwage expenditures or by the normal business procedure of raising prices. Neither of these expedients can possibly be effective in raising the general level of purchasing power. Either of them, if practiced, will produce disappointing results to entrepreneurs and confirm their natural hostility to "unorthodox" measures.[6]

For these reasons, most economists would hesitate to recommend a policy of raising wage rates at the end of depression in the hope that it would bring about recovery through increase of purchasing power.

Can wages be made more flexible?

The upshot of this analysis seems briefly to be this. More rapid wage increases as production increases in expansion are definitely desirable. Drastic wage reduction in depression may be ruled out, as may also rigid wage maintenance. Moderate wage reductions, made once for all, with certainty of no further fall, would perhaps be the compromise most likely to find favor enough to be adopted and involve the least economic risks. Wage increases as a means of promoting recovery are undesirable. This outcome sums up to a program of promoting some flexibility in

[6] For a detailed study of these points, see *The National Recovery Administration*, a study by the staff of The Brookings Institution (Washington, D. C., 1935), 757–772.

both the rising and falling phases of the cycle. What, then, are the best methods in practice for bringing this about? Can employers, on the one hand, or wage earners, on the other, make any important contribution in this matter? Or must we fall back on the regulatory power of the government to bring about the desired flexibility?

Formulas for flexibility. 1. Professor Pigou, speaking from English experience, suggests that employers would be more ready to promote wage flexibility if they could be assured that it works both ways. It would probably be found that employers in general would more readily concede higher wages in good times if they could be sure they would not be unreasonably maintained in bad times. In fact, the same might be said from the other side. Wage earners would be more ready to concede reductions in bad times if they could be reasonably sure they would be restored in good times.[7]

Barriers to flexibility that are the result of the mutual suspicion of capital and labor should not be insuperable. Like other conflicts between these great groups, they ought to yield to the skillful procedures of experienced collective bargaining. One possible means of solving this problem would be a sliding scale of wages whereby, without protracted argument, they would be adjusted by formula to variations in industrial activity or to variations in some index of prices. Thus wages could be increased and decreased from some agreed upon normal level, in proportion to the variations of a price level indicating changes in the demand for labor. Or they might be tied to variations in the cost of living, which, themselves, are indicative of changes in the purchasing power of labor income.

It would seem from experience, however, that no such formula is adequate to the task certain to be imposed upon it. The "normal" level of wages to which the actually varying wages are tied cannot be readily determined. There is no unique "normal" which can be discovered by scientific procedure. It has to be arbitrarily determined, and it is not easy to find a base satisfactory to both parties. Even when determined, new methods of production will make it obsolete, and agreements on the proper readjustment are not easy to reach. A situation may readily arise in which

[7] A. C. Pigou, *Industrial Fluctuations*, Part II, Chap. IX.

a given upward revision of wage rates will be regarded by employers as the temporary increase of a period of prosperity, but by workers as the readjustment to a new and permanently higher normal, justified by new methods of production. In such a case, workers will stand out for wage maintenance in depression, on the ground that otherwise they would be deprived of their reasonable share in the gains of technological advance. This situation is particularly likely to emerge where wages are tied to indexes of the cost of living, the effect of which is to maintain relatively constant real wages throughout the cycle. Constant real wages, in the face of increasing productivity in industry, would bar workers from the fruits of progress and condemn them to a gradually decreasing share in the national income.

Doubtless, constant real wages would serve the needs of flexibility better than the relatively rigid money wages of common experience, which actually mean real wages that fall in prosperity and rise in depression. But they still fall short of the demands of stability. What appears to be necessary is such a changing level of real wages as would maintain labor's share in the total national income. Otherwise it would be difficult to prevent the excessive profits that make for untenable expansion, or alternatively, to ensure that distribution of purchasing power that is needed to make for uninterrupted advance.[8]

Industrialists, therefore, moved by the hope of escaping the formidable machinery of collective bargaining, frequently look with favor (at least in advance) on sliding scales or profit sharing, and other wage adjustments of the formula type, but the limitations from which these schemes suffer do not make them appropriate means, at least over short periods, for maintaining labor's share in the national income.

Collective bargaining as a means of flexibility. 2. From the workers' standpoint, the most obvious method of achieving this

[8] An interesting experiment in wage-adjustment by formula is the agreement reached by the General Motors Corporation and the United Automobile Workers (CIO) in May 1948. By this agreement wages were to be adjusted both to the cost of living, and to the (presumably rising) level of productivity. The cost of living adjustment of eight cents an hour could be reversed with the fall of prices but not by more than five cents. The so-called "standard of living" adjustment, to allow for increases in productivity, consisted of an immediate increase of three cents an hour, and the presumption that this would be repeated annually as a fair compensation for expected productivity changes.

result would be a strong body of organized labor, and the most immediate need to encourage the spread of unions and strengthen their effectiveness wherever they exist. From the point of view of flexibility, workers might be more willing to make concessions when bad times come if they could be reasonably sure of getting wages effectively back again in good times—even more, if they could feel convinced that wage earners had shared adequately in prosperity and that depressions, when they did come, did not spring from failure of wages to keep pace with the level of output. Would not a strong labor movement be the best guarantee that this desirable outcome would be achieved? Could they not so raise wages in prosperity that they would be willing to accept the wage adjustments employers feel ought to be made in depression?

But labor unions rarely show any willingness to make flexibility work both ways. Strong unions are as resistant to wage reductions in depression as are weak unions. Even the strong unions of Great Britain have not noticeably budged from this common attitude.

It may well be that this is but the reflection of the various causes making for rigidity that have been set out above. Labor unions are the quintessence of the general viewpoint of wage earners. What wage earners think, they think. They systematize the relatively unconscious and spontaneous attitudes of their class. But there is another reason for their position. Labor unions, with all their power, suffer from serious limitations. There are definite bounds to what they can accomplish by economic pressure in a world based on private enterprise and the profit motive. It may not be easy to wring from entrepreneurs, even in prosperity, what wage earners regard as equitable wages. Two reasons particularly are worth noting.

(a) The general wage level at any time tends to be determined by the marginal productivity of labor. If wages are below this level, effective pressure may bring them up, but beyond this level they cannot go without causing unemployment. Small highly organized groups, if they keep their ranks closed, may force wages up substantially, partly at the expense of the public in prices, partly by squeezing employers, and partly at the expense of other less organized workers. But the wider the area covered by unions,

the farther they reach down into the ranks of semiskilled and unskilled workers, the greater the difficulty of this monopolistic policy, and the smaller the range over which wages can be raised without throwing workers on the margin out of work. Furthermore, wages being dictated by marginal levels, most unions have no adequate means whereby workers may share in the gains of that considerable body of producers in any industry who produce under various differential advantages, advantages of position, or management, or sheer monopoly. Were wages to share in any such differential, they would be rapidly cut down by the inrush of workers from less favored places. Under such circumstances, wages in the aggregate may not easily keep pace with the value of output.

(b) Even granting the level of wages at any given time to be adequate for stability, the progress of technology and improvements in management tend to increase the national income faster than the share of labor. In so far as improvements are labor-saving in nature they tend to reduce the economic importance of labor relatively to that of capital and managerial ability and to make it difficult for all save the most powerful unions to encroach by collective bargaining on the additional earnings of the other factors of production. Under these circumstances, the demand that workers, for the sake of stability, continuously maintain their share in the national income may be futile. In the event that they were able to do so, they would reduce the profits from innovations to ordinary levels and remove most of the stimulus that makes for progress.

It may well be, therefore, that these limitations which are imposed on the effectiveness of unions in raising wages have caused them to adopt the purchasing-power theories that would raise wages in booms and maintain them in depressions, rather than the alternative policy that would make wages flexible both ways.

Under these circumstances, it may be too much to expect appropriate wage levels to arise from the collective bargaining process. In areas where unions are weak, wages may rise too slowly in periods of expansion, and fall too easily in periods of contraction. In areas where unions are strong, and particularly at times when circumstances are favorable to labor, wages may rise too fast in periods of expansion and to be too inflexible in periods of contraction. In such times wages may rise faster than productivity

justifies, pinching profits of enterprise, and leading to unemployment or, if circumstances are favorable, to an increase in the level of prices.

Such seems to have been the outcome in considerable areas of American industry in recent years as exhibited in the familiar wage-price spiral that marked the inflation beginning in 1946.

The growth of unions since the passage of the Wagner Act, and the accretion of strength brought about by the demand for labor in the war years, and in the period of full employment following, greatly strengthened the bargaining power of unions at a time when, because of the large volume of liquid assets in the hands of the public, employers found no great difficulty in raising prices.

In a period of high demand based on readily expansible bank credit or, as in the years 1946–1948, on large reserves of liquid assets in cash, bank deposits subject to check, and readily cashable government securities in the hands of both business and the general public, wage increases are commonly regarded by businessmen as a justifiable occasion for equivalent price increase. But as such price increases find their way into the cost of living, they serve only to make for further wage demands, thus setting up a spiral of inflation that carries the money incomes of society to greater and greater heights.

Such inflation adds to the maladjustments common to any period of expansion, increases the dangers inherent in recessions, and lays the foundation for serious deflation when the period of contraction sets in.

Flexibility by legislation. 3. Difficulties in the way of advancing wages have tended to some extent to shift the interest of wage-earning groups from the economic to the political field, where the powerful machinery of legislation can be drawn in to supplement and extend the work of labor unions. The wider the scope of labor unions, the farther they extend into the great masses of wage earners, the more likely this alternative aim will be relied upon. It is characteristic that the leaders of the C.I.O., not those of the A.F.L., look with favor upon the extension of legal enactment to the field of wages and prices and even the control of production. But it does not seem that adequate flexibility of wages is likely to be obtained by legal enactment. In societies based

on private enterprise, laws to this end have but little scope. Specifically, they are commonly limited to minimum wage legislation, the purpose of which is to raise to some socially acceptable mimimum the wages of the lowest-paid workers. This wage provision may or may not be accompanied by some maximum limits on working hours. As the wage levels established have to be low enough not to penalize unduly the less effective employers, lest unemployment should increase, they are more advantageous in putting a floor to wages in depression than they are in adequately raising wages in prosperity. The number of those whose wages in prosperity would fall below the minimum figures established in the recent Wages and Hours Act cannot be large. Under no circumstances would they be able to tap the possible sources of high wages such as are to be found in monopolistic positions or in industries of advancing technology.

It would be theoretically possible, by appropriate taxation rather than wage legislation, to get at business income which seems to evade the pressure of unions. Excess-profits taxes on corporate earnings would gather in the earnings of differential advantages and monopoly, as well as the additional earnings from technological and managerial improvement. Unlike wage increases, these are not limited by production at the margin. They are discriminatory and can leave marginal production without any additional burdens. If these taxes are then distributed to labor in some appropriate way, as, for example, in social services that otherwise would have to be paid from other taxes, or even by granting a consumer dividend to all people as advocated by the exponents of Social Credit, then, indeed, it might be possible to maintain in prosperity the worker's share in the national income.

But taxation of this sort may well penalize industry and reduce, rather than expand, the national output. In so far as it rests entirely on differential advantages from monopoly, or from favored location, or from possession of particular managerial talent, it may not be followed by any ill effects. The income is a quasi-rent, not part of the supply price, and may be taxed with impunity. But taxes on the earnings of technological innovations and managerial improvements stand in a different case. The effect thereof is to reduce the profits of innovation to ordinary levels and to re-

move the stimulus that, in the past at any rate, has made for progress. Doubtless some level of tax on excess profits might be found that would not reduce noticeably the forces of innovation; but no level of tax that reaches the ideal of maintaining labor's share in the national income could fail to be burdensome. Thus society is in a dilemma. If we gain stability, we may lose progress. We can have stability, or we can have progress; but we cannot have both.

It may be, therefore, that, in the world as it is, flexibility of wages cannot be had. The forces which are needed to bring wages up in prosperity are not likely to be adequate. And as long as this is so, labor unions backed by public opinion, or public opinion alone if labor unions are absent, will demand the maintenance of wages in depression. We may fairly conclude that wage policy based on considerations of costs will tend to give way before wage policy based on considerations of purchasing power. As far as it goes, this outcome means essentially the adoption of the Hobsonian point of view that the fundamental cure for cyclical fluctuation is a more even distribution of income. It means, too, that stabilization must largely come from other sources than wage policy.

25

PRICE POLICY

Price inflexibility

Wages are not the only relatively inflexible element in the economic structure. Prices, too, can be inflexible. They can be inflexible in good times when lowered costs due to innovation may fail to be passed on to the public. They can be inflexible in bad times when business in general, but particularly monopoly, prefers to reduce output rather than to make the concessions in price necessary to maintain existing scales of consumption.

The tendency to hold up prices in depression has long been pointed out by economists and may be taken to be a normal policy for all business in a position to carry it on. On the face of it, this policy implies some limitation on competition, for otherwise prices would tend to fall in depression to the short-period normal determined by marginal variable costs, with no allowance for overhead. As it is, wherever tacit understandings make it possible, wherever imperfect competition dictates it to the producer, and particularly in the event of monopoly proper, prices tend to be maintained at levels higher than the short-period normal, and reduction in output is greater than it otherwise would be.

What are the réasons for this attitude?[1]

Spoiling the market

1. In the first place, we have the fear of "spoiling the market." Prices cut to variable costs do not cover the total costs of production; once down, they may not easily come up, with bankruptcy

[1] See A. Marshall, *Principles of Economics*, Book V, Chap. V; A. C. Pigou, *Industrial Fluctuations*, Part I, Chap. XVIII; J. M. Clark, *Economics of Overhead Costs*, Chap. XXI, Sec. 3.

menacing in the background. The ethics of the trade will heap moral condemnation on too much cutting. There is a fear, too, lest the market be spoiled for future sales in better times. Buyers stock up when prices are low, and the normal recovery of demand is delayed by consumption from stock. The consumer may become habituated to lower prices and regard higher prices, if restored, as unfair. If goods have been intensively advertised and become associated in the buyers' mind with a definite price, there is an added motive to maintain prices lest the advertising appear to be mere ballyhoo designed to make products seem worth more than they really are.

Fear of inelastic demand

2. A second cause of price maintenance is the common belief in business that demand in depression is inelastic and that to lower prices is merely in varying degrees to reduce the aggregate receipts. Businessmen are commonly skeptical of any favorable reactions to price reductions. They tend to regard depressions as storms that have to blow themselves out, and about all that can be done is to take in sail until the gale is over. This attitude is particularly prevalent in industries producing capital goods and the instruments of production. Here is a derived demand that, under the influence of the principle of acceleration, tends to fall to a low and apparently inelastic level. Business demand, it is felt, depends on the state of confidence, not on the price level. As long as confidence is low, low prices, like low interest rates, are ineffective to stimulate revival.

This attitude is stronger wherever there is any degree of monopoly. In pure competition, the demand for any firm's output is infinitely elastic. Any small cut gets business away from rivals. But monopoly has its particular market, and elasticity of demand, even in good times, is not perfect. Cuts in price cannot then be as effective, and the temptation to avoid them is particularly strong. The apparent scope of imperfect competition indicates that the area of relatively inelastic demand may be greater than competitive equilibrium theory has assumed.

It may be added that the fear of demand inelasticity may, in part, derive from the experience of piece-meal reductions in prices. As in the similar case of wages, such practices set up expectations

of further reduction, cause businessmen and consumers to withhold purchases in anticipation thereof, and create a situation of "perverse elasticity" making for cumulative deflation. This outcome, of course, might be avoided by drastic once-for-all reductions, provided the buyers did not take them to be a bluff.

The influence of the accountant

3. These causes are reinforced by the influence of accounting concepts which lead business to oppose any prices which do not cover "costs." The aim of any business is to sell at such prices as will cover costs and leave a margin of profits. It regards prices properly related to costs as fair prices. It does not like to sell below costs, and regards prices below cost as unfair and the mark of the "chiseler." Furthermore, these costs which prices should cover include not only the variable costs such as wages, materials, and so on, but also the overhead costs which go on irrespective of the volume of output. The accountant discovers what these costs amount to, and these, spread out over the output, are taken to be a measure of the price which must be charged. If prices cover these costs, well and good; if they do not, the business is losing, and proprietors must reduce output or incur the odium of "selling below cost."

Now in depression with falling demand and reduced output, what happens to "costs"? Some costs, of course, such as materials and wages under the pressure of unemployment, fall. But overhead costs, including depreciation charges as long as plant values are not promptly written down, do not fall, or fall but little. From the accountant's standpoint, those relatively fixed charges spread over a smaller volume of output, raise unit costs, and may balance (possibly overbalance) any fall in variable costs. The greater the overhead, the greater is this possibility. Under these circumstances, producers, thinking in terms of covering "costs," resist price reductions. In large-scale industry, with expensive capital installations, this resistance is particularly strong and, in the field of producers' goods, it may conspire with the fear of inelastic demand to make the utmost price rigidity.

Accounting concepts may conflict with good sense. Logically, these accounting obsessions might even demand price increases, and sometimes they appear actually to do this. This attitude is

irrational, leading as it does to raising prices in periods of falling demand. Carried to its logical conclusion, it would cause prices to rise and rise, each rise producing smaller consumption, and each reduction of output raising unit costs, until finally no business whatever would be done, and costs per unit would be infinitely high. That this result may be the direction of policy is indicated by the following conversation between Feller, TNEC counsel, and Weir, of the National Steel Company, in hearings before the TNEC on price policies of the steel industry. Weir had made the statement that it was the "patriotic duty" of every steel producer to make a profit at all times and that in depression profit margins could be maintained only by raising prices.

Mr. Feller: Doesn't your theory lead to this—that as the demand for steel declines and with it the cost increases, of necessity the price would have to keep going up?

Mr. Weir: Absolutely.

Mr. Feller: In other words, as the demand went down like this, the price would go up to meet it?

Mr. Weir: Absolutely.[2]

Again, in the operation of the codes under NRA, the opportunity to raise prices was seized on so quickly as to arouse the complaint of the Consumers' Advisory Board. To quote the report of the board to General Johnson in March 1934:

> Many of the provisions (against selling below cost) include such elements of cost as charges for excessive and obsolete equipment, selling expenses and even returns on investment. Such provisions raise the question of whether or not recovery can be secured while basing minimum prices upon charges for the use of plant and equipment, etc., which would only be appropriate to a larger volume of sales and a far larger volume of consumers' purchasing power than now exists, and in some cases than has ever existed.[3]

If it could be assumed that price competition were the rule, these impediments to price reduction would have to be ruled out. Presumably this situation exists in agriculture where prices in depression must approach the short-period normal. In manufacture, on the other hand, various degrees of imperfect competition make

[2] Hearings before the Temporary National Economic Committee, Part 19, p. 10,652.

[3] *New York Times,* March 5, 1934, p. 2.

it possible to follow the dictates of restriction, and all the influences mentioned will play their part in keeping up prices. Where there is actual monopoly, either by the form of organization or through various kinds of agreements, the tendency to restrict under these circumstances would be particularly powerful.

The extent of price inflexibility

Pigou, reflecting English experience, does not attribute great importance to price rigidity. He gives it a weight of one sixteenth as a factor determining the amplitude of fluctuation, one half as much as wage rigidity. Indeed, he considers that some steadiness of price may be of great convenience to buyers, and that resistance to excessive price cuts may stave off the highly disturbing consequences of bankruptcy. But, in the United States, economic opinion has tended to give much greater weight to price rigidity and to suspect that its influence has been gradually increasing. The apparently expanding scope of large-scale production, the concentration of corporate power revealed in studies such as Berle and Means, *The Modern Corporation and Private Property,* and the reasoning of economic theory on the restrictive possibilities of imperfect competition have concentrated attention on the increasing possibilities of price rigidity. An important section of economic opinion claims price rigidity to be an important, even dominant, factor in the prolonged depression of the 1930's, when the appropriate readjustments in some prices seemed uncommonly long in coming.

The scope of "administered" prices. Evidence in this regard has been set forth in the well-known studies of Gardiner C. Means.[4]

In order to ascertain degrees of flexibility, Means examined the monthly changes in price of the various commodities entering into the Bureau of Labor Statistics wholesale price index. Some 750 items were checked over the years 1926 to 1933, a period including 94 months and 94 possible price changes.

Classifying the items into 10 groups by frequency of change, Means got the following result:

[4] G. C. Means, "Price Inflexibility and the Requirements of a Stabilizing Monetary Policy," *Journal of the American Statistical Association,* Vol. 30, 1935, pp. 401–403. See also National Resources Committee, *The Structure of the American Economy,* Part I (Washington: Government Printing Office, 1939), pp. 129–149.

Group	*No. of Items*	*Frequency of Change*
I	14	0
II	77	1–4
III	76	5–8
IV	82	9–13
V	96	14–21
VI	88	22–35
VII	86	36–60
VIII	85	61–87
IX	83	88–93
X	63	94

Thus at one end of the scale are 14 items showing no change at all over this whole period and 91 with less than 5 changes; while, at the other end, 63 changed every month and 146 changed 88 times or more. The prices at one end of the group are "administered"; the items at the other end are subject to the uncontrolled vagaries of the market.

Furthermore, in depression, frequency of price change and magnitude of price change tend to go together. Over the period 1929 to 1932, items which changed most frequently showed also the larger drop in price. The most flexible prices tended to drop, on the average, 50 per cent; those that changed least often fell, on the average, only 10 per cent.

The result of these varying degrees of change is to create great discrepancies in production as depression emerges. Where prices are held rigid, production is greatly curtailed. Where prices are flexible, production is relatively little affected. The following table is offered by Means in proof:

PRICES AND PRODUCTION—1929 TO SPRING OF 1933

Industry	*Per Cent Drop in Prices*	*Per Cent Drop in Production*
Agricultural Implements	6	80
Motor Vehicles	16	80
Cement	18	65
Iron and Steel	20	83
Auto Tires	33	70
Textile Products	45	30
Food Products	49	14
Leather	50	20
Petroleum	56	20
Agricultural Commodities	63	6

Similar conclusions are reached in the more extensive study made under Means' direction for the National Resources Committee.[5] Examination of price changes in the depression of 1929–1932 showed that depression sensitivity was, on the whole, associated with raw materials, agricultural products, market-dominated prices, nondurable goods, and standard commodities; and insensitivity was associated with fabricated products, manufactured goods, administration-dominated prices, durable goods, and differentiated products. It was held, further, that the dominant factor in making for depression insensitivity is "the administrative control over price which results from the relatively small number of concerns dominating particular markets."

Such great discrepancies in prices and production seem to Means to constitute a serious impediment to balanced economic functioning, the more serious as they appear to be the result of the growth of economic concentration, which has gradually been increasing in pace. We are approaching an economy half free, half controlled. This situation would be dangerous in any age, but in a period subject to rapid technological change, like our own, anything that interferes, as this growing inflexibility must do, with the effective process of continuous adjustment will hinder progress and, in depression, may bring about prolonged stagnation.

Means' conclusions challenged. It cannot be said, however, that these conclusions are accepted without challenge.

Means himself has pointed out that price statistics give no clue to improvement in quality, and that price quotations are often nominal and not representative of actual prices reached by negotiation. But other more formidable criticisms have been made.

1. It has been shown that flexible and inflexible prices are the mark of all depressions. Rufus Tucker has produced evidence from four great depressions showing not only the persistence of this phenomenon but apparently no essential increase in the spread between the two levels of prices.[6] It is commonly conceded that price rigidity is by no means a phenomenon of recent origin.

2. The persistence of inflexibility over such periods raises the

[5] *The Structure of the American Economy,* pp. 132–137.

[6] R. S. Tucker, "Reasons for Price Rigidity," *American Economic Review,* March 1938. Also "The Essential Historical Facts about 'Sensitive' and 'Administered' Prices," *Annalist,* Feb. 4, 1938.

suspicion that concentration of economic power, which is of relatively recent origin, is not the sole important factor in price maintenance. Other conditions than control keep prices up; other conditions than lack of control bring them down. Tucker suggests that, where labor costs are important and have not fallen, prices may be maintained even under competition. Again, that persistence of demand keeps prices up in areas of production where control seems insignificant.

3. Economic reasoning indicates that maintenance of price in depression tends as such to reduce the volume of consumption and hence of output, but statistical inquiry into the experience of 1929–1933 does not seem to confirm this relation so strikingly as Means seems to claim. Further investigation into the behavior of prices and production in this period shows most diverse relations. Where prices have been continuously maintained, the reduction of output for different commodities has a wide variation. Where prices have been reduced, output changes accompanying them range through varying degrees of both increase and decrease.[7] These facts justify the conclusion that many other factors in addition to prices must be taken into account to explain the observed variation of output.

This controversy indicates that our knowledge of the significance of flexible and inflexible prices is too limited to be sure that inflexibility is increasing, or that it is caused by concentration of economic power, or that it was a substantial factor in the great reduction of output in the depression of 1929–1933. We must be content with the undeniable fact that some prices in depression are relatively inflexible, and that, all other things being equal, they tend to increase the amplitude of fluctuations in output, particularly where they occur in industries producing capital goods.

Price flexibility desirable

To those who regard the price discrepancies that characterize the economic system in booms and slumps as major contributing causes of instability, a purposeful policy of price flexibility seems, therefore, to be one of the important weapons of stabilization.

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[7] J. Bachman, "Price Inflexibility and Changes in Production," *American Economic Review*, September 1939.

1. It would help to prevent profit inflation in periods of rapid technological progress and thereby reduce the danger of an investment boom such as that of the 1920's.

2. It would reduce the amplitude and duration of depressions and, by lessening the disparity between controlled and uncontrolled prices, avert the sectional antagonisms and internal economic strains displayed in the 1930's.

3. It is an indispensable adjunct to any monetary policy directed to maintaining a managed price level. Supposing the aim of money management is, via a fixed volume of money per capita, to allow the price level to fall with general improvements in technology; it is quite as important that all prices fall as that prices on the average be lower. Were some prices maintained in the face of falling costs, then other prices must be reduced unduly. Thus industries possessing an element of monopoly power could put an intolerable burden of price adjustments on the more competitive fields. To avoid this situation, flexibility of all individual prices must be achieved.

We must now inquire what measures to achieve price flexibility are available.

Flexible prices by exhortation

It is conceivable that customary attitudes of business could be broken down and that businessmen could be persuaded to take larger and longer views. This position means that they must forego the advantages of monopolistic action in good times, and in bad times overcome their fears of spoiling the market and give up their ingrained belief in inelastic demand. This result might well be accomplished. The earnest writers inspired by H. G. Moulton of the Brookings Institution have urged businessmen to see the larger wisdom of continuous price reduction as technology proceeds on its triumphant course. Let them adopt a "dynamic" concept of price based on the encouragement of potential demand, rather than their present "mechanical" concept that is a mere adding up of costs. Then it would be found that production is no longer held up by lack of effective demand, but will expand within limits determined only by the state of our industrial arts. Perhaps they can be brought to realize that only thus can they restore vitality to private capitalism and avert the onward march

of the controlled economy that otherwise is surely bound to come upon us.[8]

Whether this method would meet the problem of depression is another matter. Where goods are specialized and prolonged efforts made to build up particular markets, heavy barriers are raised against "spoiling" them by price reductions. Perhaps, in less specialized fields, fear of inelasticity of demand might be overcome, but the testimony of businessmen in the great depression is not favorable. If reduction of prices could occur promptly and, once made, not be repeated, the producers' fears of delayed demand might be overcome, but this would need a community of action such as would hardly be expected from a multitude of business units. For this reason, more might be expected if business were organized into trade associations, which might be able to bring unity of action over much wider fields. A business might be much more willing to risk prompt price reductions if it knew that other businesses from whom it buys commodities were going to do likewise.

Trade associations as an instrument for flexible prices

At first thought, trade associations seem to be an unpromising instrument, because they have been suspected of using their powers, when they could, for maintaining rather than reducing prices. Hence, they normally live a suspected life in the looming shadow of the antitrust laws.

But trade associations have a genuine interest in stability. The economic disruptions of depression are as disastrous to business as to other victims. The popular hostility to private capitalism that the miseries of recurrent unemployment generate is a menace that justifies every effort made to avoid it.

Consequently, trade associations, along with their other more specific functions, have been offering remedies for industrial fluctuations. Their most thoughtful exponents argue that they can regularize and stabilize production and employment, coördinate production and consumption, and attain balance in the economic system. Fundamentally, they accept the businessman's explanation of booms as due to "overproduction," overproduction as due

[8] See E. G. Nourse and H. B. Drury, *Industrial Price Policies and Economic Progress*, Chap. XI (Washington: The Brookings Institution, 1938). Also, E. G. Nourse, *Price Making in a Democracy* (Washington: The Brookings Institution, 1944).

to the unregulated output of competitive industry, where each unit, working under the spur of rivalry and in the dark as to the doings of its rival, expands unduly, to the inordinate expansion in aggregate outputs. They would remedy this situation by coördination and planning. Production would be kept within bounds, and, with the disappearance of booms, depressions would be avoided. Or, if they should emerge, coördination of production could still achieve stability. None need shrink his output, since the output of each would constitute the demand for all.

Stability of production is an admirable end. All wish that trade associations could reach it. Unfortunately, these are interested not only in stability of production but also in stability of price; and whereas one or the other of these can be obtained, only the most unusual circumstances could enable them to obtain both. If demand did not change, there is no reason why a trade association should not achieve stability of both production and price. Having determined on a price that would sell the output proper to its capacity as a whole, the trade association would proceed to produce that output and hold that price indefinitely. But if demand changes, and demand, under actual conditions, is sure to change, then the group can have production stability or price stability, but it cannot have both. If output is stabilized, prices are sure to vary. If demand falls, as in depression, price reduction cannot be avoided. On the other hand, if prices are stabilized, output cannot remain constant. If demand falls, price maintenance must reduce consumption.

Doubtless, if contraction and expansion of demand could be accurately foreseen, and if deviations from average levels were not of long duration, both production and prices might be stabilized by production for stock when demand fell and sales therefrom when demand rose. But this device, although successful for the short and predictable variations of seasonal demand, is usually neither physically feasible nor financially possible for periods as long as the cycle.

Trade associations may use wrong policies. What trade associations have to offer the public, therefore, is not price stability *and* production stability, but price stability *or* production stability, and the evidence seems to indicate that, in the face of these two

alternatives, trade association lean toward price stability. The codes of fair competition set up under the NRA give the most comprehensive picture of what trade associations would like to do if they could be freed, as they were, from the dangers of prosecution under the antitrust laws. Many of them contained provisions which, although doubtless explicable by obsessions about unfair competition that afflict these associations, seriously interfere with price flexibility. Some three fourths of the codes had provisions against selling below "cost," which frequently includes the cost of idle overhead. One half of the codes required their members to file prices with the code authority and give notice of change. Such provisions discourage price reductions. Indirect price concessions of all kinds were also discouraged, and indirectly price maintenance was protected by limitations on machine and plant hours, by restrictions on addition to capacity, and even by production quotas.

The result was a general tendency to raise prices at a time when depression was barely giving way to recovery, and, thereby, not only to retard recovery but to cancel to some degree whatever stimulus might have come from the AAA payments to farmers and the NRA wage policies.

The truth of the matter is that trade associations express the quintessence of the general economic philosophy of businessmen, and it is idle to expect that, left to their own devices, they will do other than fortify and extend existing business practices. They will, therefore, continue to insist on keeping prices above cost, on the determination of which they will continue to be dominated by accounting conceptions. It will be easy to convince them that demand is inelastic, especially in depression; and they will continue to fear any concession that seems likely to "spoil the market." From such sources, price flexibility may be hard to obtain.

Regulated trade associations. Those, however, who think of business cycles as a normal consequence of an unplanned economy, where keen competition is naively expected to bring about good results, are not prepared to give up trade associations as a means to stability. The coördination of production that they might give should not be sacrificed merely because of an apparently incorrigible tendency toward price inflexibility. By appro-

priate governmental regulation it should be possible to get the advantages without the attendant evils. Let the principle of codes be retained. The codes were all right, but they did not go far enough. Through dominant representation in the code authorities, or by some public commission with appropriate power, government should regulate prices in the interests of stability and the widest use of capacity. If the associations will listen to persuasion, well and good. But if not, appropriate prices should be imposed by administrative decree.

But the difficulties inherent in price regulation are formidable. Even in relatively stable industries such as railroads and public utilities, the problem of the right price is not easy to solve. In dynamic industries exposed to variability of demand on the one hand and continual changes in methods of production on the other, price control by public body meets almost insuperable difficulties. It might be possible to bring prices down gradually where technical progress justifies, but the machinery of public control is not likely to be sensitive enough to make for quick adjustments, and the short-period changes demanded for cyclical stabilization might not be easy to bring about. Experience with the regulated prices of public utilities is not an encouraging one. Regulated producers are too likely to devote resources to influencing the regulators that should have been more usefully employed in improving their business. Further extension of this economic waste is not a pleasing prospect—so little pleasing, indeed, that any reasonably effective alternative for reaching our goal is to be preferred.

Wartime price control

The experience of price fixing during the Second World War, despite the undeniable effectiveness of the controls, throws little light on the probable success of price regulation in making for greater price flexibility.

The aim of war controls was to make prices inflexible, not to make them flexible. They were to be prevented from rising, not to be encouraged to rise. And the most substantial success in this field was precisely in the area where prices are relatively inflexible. The policy of business concerns in this area made for settled price

structures with infrequent changes. As Galbraith puts it, reviewing his wartime experience in the OPA, it is easy to fix prices that are already fixed.[9]

But the problem of prices in depression is not to have fixed prices stay fixed, it is how to get prices down. This is another matter involving acceptable standards of fairness, and reasonable profits, with all the necessary controls over accounting methods, company finance, and other matters familiar in the field of public utility price regulation.

These controls must be more exacting than war controls. Such wartime adjustments as are called for do not have to be exact. The temper of the times does not require more than approximate accuracy either as to the relations of prices one to the other, or as to the level of profits. After all, the whole system of regulation is but temporary, and in any case, if prices are unduly favorable to A over B, the allocations of materials and manpower control which assist price-fixing in wartime prevent A from exploiting his advantage. All these regulations are accepted by public sentiment as a necessary part of the war effort.

None of these advantages can be guaranteed in peacetime, and as a result wartime experience throws but a dim light on the problems of peacetime regulation.

Why not restore competition?

The question, therefore, might be asked: Why not go down to the core of the problem by restoring competition in our industries? If flexible prices are desired, competition offers the most effective means of getting them, far more so than the clumsy method of bureaucratic control. In a competitive society, prices are flexible, and readjustments are prompt and continuous. The hindrances that block and clog the adjusting mechanisms arise from monopoly, and the elimination of monopoly will effectively remove the power to "administer" prices. Instead of encouraging trade associations, what we need to do is precisely the opposite. Let them be limited to such coöperative activities as raise no suspicion of price or output control. Prosecute combines in re-

[9] Cf. J. K. Galbraith, "Reflections on Price Control," *Quarterly Journal of Economics,* August 1946, pp. 481–484.

straint of trade. Let the overgrown concentrations of corporate power be broken up into a sufficient number of units to ensure effective competition.

But antitrust laws in the United States have been singularly ineffective. Prosecutions, even when successful, have not prevented the divided units from reuniting in less vulnerable forms, particularly in the mergers which are more difficult to construe as combinations in restraint of trade. So persistent has been this tendency as to indicate that competition in many industries, especially those with great overhead costs, may be as economically inappropriate as in such "natural" monopolies as railroads and public utilities. If this be so, then, although it may be possible to enforce competition in industries where the number of producing units is still fairly large, the restoration of competition in those where a few large-scale units dominate might be so expensive and involve the loss of such considerable productive advantages as to be quite impracticable.

Is competition feasible?

Whether, in fact, this situation exists in industry today is, however, an open question. Competent students are by no means agreed on the matter, nor is the available evidence adequate to justify a confident stand. There seem to be two irreconcilable factions. One group denies that our existing large concentrations in industry are based upon effective producing and marketing economies. Size, indeed, is a handicap. Monopoly tends to stagnation and inefficiency. Economies of large-scale operation could not and did not bring about many of our large concerns. The motives that brought them into existence were not engineering or economic; the motives were financial and promotional. The profits derived from stock issue and manipulation, not from effective operation, were the dominant factor. They hold their own by the sheer threat of size. In a fair field, they could not be maintained.

Now there is some impressive evidence in support of this view. There is the actual history of the promotion and financial operation of our great corporations. There is Dewing's well-known examination of 35 outstanding consolidations of the 1898–1902 period, showing that the earnings of the companies after consoli-

dation were lower than before: lower in the first year, lower in the tenth year, and lower on the average for the whole 10-year period after the consolidation.[10] There is the evidence of various statistical studies of recent years disclosing that the largest concerns are not those that make the largest profits. There is the evidence, too, of the sprawling and uncoördinated structures of some great holding companies in the field of railroads and public utilities.

But this evidence is not convincing to those who find the clue to size in the productive and marketing advantages of large-scale units, and who desire to escape the destructive warfare to which competition on this scale of operation tends to degenerate. This group, although admitting that promotional motives and sheer megalomaniac ambition may carry the size of corporate units beyond the point of optimum efficiency, denies that what evidence is forthcoming upholds the advantage of reducing the average unit to a size capable of ensuring effective competition. Some of the largest units might be broken down, but technological considerations make the most efficient size in many industries a fairly large one—large enough, indeed, to limit sharply the probable number of concerns. Beyond this, further parcellization would begin to be costly, and price flexibility would be achieved at the expense of the general standard of living. From this standpoint, therefore, a new dilemma emerges. If we want the economies of size, we must submit to a concentration of output which, even if it avoids "monopoly," cannot avoid "monopolistic competition," with some control over price, some degree of "price jurisdiction," and with that, some degree of price inflexibility. If, on the other hand, we want flexibility of price, we must submit to such an increase in the number of operating units as may sacrifice the advantages of size and lose economies of operation that society can hardly afford to give up.

One may fairly conclude that price flexibility, on examination, will prove to be as illusive and, in our large-scale industry, as difficult to achieve as its counterpart in the labor field—namely, wage flexibility. Whether we should exhort business to behave itself, whether we should encourage trade associations in the hope that

[10] A. S. Dewing, *Financial Policy of Corporations,* 3rd Edition (New York: The Ronald Press Company, 1934), pp. 747–751.

government chaperonage might make them useful without qualification, or whether we should move to the regulative extreme of price fixing by administrative body or to the *laissez faire* extreme of restoring active competition—none of these alternatives seems to offer any certainty of success. About all one can say with reasonable assurance is that the last alternative offers the least chances of all. It seems likely that we will have to accept a relatively noncompetitive industrial order as a fact.

Presumably, therefore, we will have to accept the persistence of relatively inflexible prices in certain areas of the economy. If so, we can fall back on the monetary and fiscal policies of government to achieve stability through the maintenance of effective demand. For if effective demand is maintained, then the price dispersion that is both a consequence and a contributing agent tending to intensify booms and slumps, would no longer be important.[11]

[11] Cf. A. H. Hansen on price flexibility in *Fiscal Policy and Business Cycles* (New York: W. W. Norton & Company, Inc., 1941), Chapter XV.

26

CONCLUDING REMARKS ON STABILIZATION

NOW THAT WE HAVE completed our survey of stabilizing measures, we should be able to decide better whether, on the whole, stabilization of the cyclical process is worth attempting.

The social gains from stabilization

That stabilization is desirable is indicated by both common sense and economic analysis. It is conceivable, as Professor Pigou points out,[1] that an economic activity which runs in alternate sprints and stoppages would best satisfy the needs of society. If the aversion to work or the desire for goods underwent periodic changes of several years' duration, so that men left to themselves would arrange their lives as alternating periods of active work and relative idleness, then the cyclical process would contribute to economic welfare, and its stabilization reduce it. But common sense, as well as the behavior of workers in good and bad times, confutes this view, and we may assume that stabilization would increase, not diminish, economic welfare.

Stabilization substitutes regular income and work for irregular income and work. If the principle of diminishing utility holds good, then this substitution is an economic gain. "A real income varying from $(A + a)$ to $(A - a)$ yields less satisfaction than one constant at A, the arithmetic average of these two magnitudes." [2]

[1] A. C. Pigou, *Industrial Fluctuations,* Part II, Chap. 1, where the net value of stabilization is acutely analyzed.

[2] Pigou, *op. cit.,* p. 218, note 1.

Unless a person is of a speculative turn of mind, he will pay more for a regular income than for an irregular income of the same aggregate. That most people are like this seems to be indicated by the high value of fixed-income securities. For the masses of the people whose incomes are small, regularity is particularly important. Their consumption has no great leeway; reductions in income encroach on important items in the standard of living. As the poorest-paid workers are most liable to unemployment because of economic fluctuations, the loss of welfare by instability is unduly large.

As for work, it is not possible to deny that irregularity is an evil. Instead of reasonably constant effort, our cyclical fluctuations demand exhausting pace and overtime in expansion, unemployment and short time in contraction. This variability is an evil in itself. The uncertainty which it involves, the constant fear of discharge that hangs over all workers like a nightmare, makes the evil greater. Add to this the loss of skill and the destruction of morale, which depression brings ever more seriously as months go on, and one has piled up a formidable total of disutility.

To this must be added the consequences of irregularity in making for restrictions on production. This outcome is due partly to industrial disputes over the terms of work, notoriously sharpened by irregular employment, and partly to restriction of output to make the jobs last longer. In depression, it arises from the refusal to cut wages and its consequence in increasing the total volume of idle men and idle capacity.

As to resources, cyclical fluctuation reduces their effective placement and use. Prosperity encourages speculation, extravagance, and waste, with all the misdirection and loss of capital these involve. The variation of aggregate output from high to low compels excessive expansion of capacity for peak loads, adding thereby to the extent of each expansion and increasing the total volume of idle resources when depression comes.

These considerations mean that, even if the reduction of output and income in depression were counteracted by the equal and opposite expansion of output and income in prosperity, stabilization would still be desirable. If the effect of cycles is to reduce the average level of production below what might be expected from a stabilizing policy, the argument for stabilization is even stronger.

That the latter is a possibility is indicated by the investigations of W. C. Mitchell and W. I. King on the experience of the period 1890–1919.[3] By comparing the actual yearly production in mining, manufacturing, and transportation with a hypothetical level based on the output of certain "active but unhurried years," they found that, in 10 years of the 30, production exceeded this reasonable level; in 20 years of the 30, it fell below it. If we subtract the gains from the losses, there remains "a net loss of nearly 3 percent of the output of a whole generation of effort." [3]

The social costs of stabilization

While these considerations all indicate that stabilization will have good results, it does not follow that stabilization is desirable. It will be desirable only if its gains are greater than its costs, and that the costs may be formidable has been foreshadowed throughout the preceding chapters of this section.

It is evident from our review of the various methods of stabilization and the specific problems they raise that it will not be an easy task to bring the business cycle under control. Business cycles, under their statistically smoothed front, conceal an amazing complexity of relations, which the most acute analysis has not yet succeeded in explaining. Control, in such a situation, finds itself continually meeting unexpected difficulties, starting off a train of unforeseen consequences. It is the economic system as a whole which we are trying to bring into stability, and it is no wonder that the task turns out to be formidable.

As we have seen, each method of attack has its own particular problems. Monetary control seems the simplest of all the procedures. It involves no interference with business management; it is not a "regimentive" type of device. It does not "put the government into business" or make the government a competitor of business. It attacks the system through one of its strategic channels, the bottleneck of money and credit through which all business transactions tend to pass. Yet we have seen that its essential aim of controlling the quantity of money may not be successful short of methods which deprive banks of one of their historic

[3] *Business Cycles and Unemployment.* A report made to the President's Conference on Unemployment (New York: McGraw-Hill Book Company, Inc., 1923). Chapter III, pp. 34–37.

functions, such as "100% money." At the best, monetary control seems helpless as a means of recovery from depression, since, although money can be made available in almost any quantity, business cannot be made to take it.

A remedy for this situation is public works, which go one step further and, by appropriate deficit financing by the government, get the idle resources into circulation. But whereas public works can seemingly avert the mere stagnancy of resources, we have seen that they do not necessarily thereby remove the causes which impede recovery. There are many neutralizing factors which prevent full efficiency of public expenditures; and although the strength of these cannot be exactly measured, they appear to be strong enough, at times, not only to retard the revival of private investment but to cause renewed slump when public works are temporarily reduced in volume. Experience with public works shows how difficult it is, in a system based on private enterprise, to promote a public good without the danger of incurring a private loss.

Again, effective stabilization of consumer expenditures through a flexible tax system, although theoretically easy, raises questions not only of the proper adjustment of taxes so as not to impede investment while increasing consumption, but of the adaptiveness of congressional procedure to the needs of speedy and decisive action at proper times. It may not be easy to persuade Congress to give up direct power over tax changes, or to resist the urge to oppose tax increases when, as in inflationary periods, such increases would be desirable.

Similarly, although flexibility of prices and wages may be an important aid to stability, the means of getting it may strike hard at some of the vital citadels of private enterprise. More particularly, the search for means of reducing the rigidity of some industrial prices may run from unsuccessful antitrust measures, through "codes of fair competition," to the regulation of the price policy of trade associations. When this situation comes about, the serious possibility that price regulation may be no more successful in this field than it has been in the field of public utilities brings a demand for public ownership of "monopolies" so close as to be just around the corner.[4]

[4] Cf. P. H. Douglas, *Controlling Depressions*, pp. 247–250.

These problems, however, are but instances of the inevitable conflict between public control and private interest that all regulatory measures stir up. They are frictions that indicate part of the "cost" of stabilization. But there are other costs that may be even more important—costs which come from the sacrifice of various incidental benefits that cyclical fluctuations may confer. Cyclical fluctuations are not an unmixed evil, as the following examples show.

Some fluctuation may be beneficial

1. Robertson[5] points out that some industrial fluctuations are "appropriate," as being the natural reactions to "real" changes that are not in themselves undesirable. Thus changes in real cost such as by invention, or changes in derived demand via the principle of acceleration, or changes in the supply offered from agriculture, all occasion "justifiable" changes, often of rhythmic nature, in the aggregate of industrial output. These changes are still "justifiable" in a wage system with a relatively rich employing and a relatively poor wage-earning class, even though they are larger than would have occurred in a system of self-employed workers.

But superimposed upon appropriate responses are inappropriate responses that carry reaction to various impulses to undesirable and unjustifiable lengths. Thus the imperfect divisibility of units of production causes undue investment. Heavy overhead costs may dictate an otherwise inappropriate rate of output. Often, means of production have to be kept working to prevent damage, and so forth. Always the competitive illusion of businessmen and their tendencies to psychological waves of sentiment cause them to make exaggerated responses to any given stimulus.

Now, clearly, the needs of policy demand that only inappropriate fluctuations be suppressed. A policy which, in the urge for stabilization, hinders appropriate fluctuations is doing society not good but harm. As long as the changes which stimulate response are desirable, appropriate responses are also desirable. But the precise degree of control that this requires could be expected only from men whose knowledge of appropriate responses was as discriminating as their use of control mechanism was wise. This virtue not being available short of Utopia, we run the danger of

[5] D. H. Robertson, *Banking Policy and the Price Level*, Chapters II, III, and IV.

some immeasurable loss of value which is the hidden cost of any enthusiastic urge to stabilization.

2. If cyclical fluctuations are caused by waves of innovation, as has been argued by Professor Schumpeter, or, put in another way, if the process of innovation expresses itself as a boom and a depression, then stabilization may interfere with the effective introduction of technological change and hinder the reasonable progress of society. In this theory, boom is the expansion caused by innovation; depression is the inevitable adjustment of values and costs which must follow. All progress is painful. Reduction of costs by innovation is rough on less gifted producers who must be eliminated or reorganized on a more economical basis. If innovations were gradual and continuous, adjustment could be also, and the violent oscillation of boom and slump might be avoided. But innovations come in spurts, and as long as this is so, excess and adjustment cannot be avoided.

In these circumstances, we can favor stabilization or we can favor innovation, but we cannot have as much as we would like of both. It is the fundamental conflict of the present stage of capitalism, the conflict between progress and security. Business cycles are the price we pay for progress. Possibly we pay too much, but we need more wisdom than we now have to know how much this excess is, or what precise degree of control would eliminate the excess while leaving the necessary alone.

3. The French economist, François Simiand, has approached the question of progress from another angle.[6] As he sees it, the alternating phases of expansion and contraction are due to changes in the supply of money (gold or credit); and both phases are necessary for progress. The upward phase, with its rise of prices, causes activity and income to increase up to limits set by diminishing productivity, and so on. When these limits are reached, and depression sets in, we do everything we can to hold the standards reached in expansion. Wage earners try to keep up wages; employers try to meet their costs by invention and improvements. So, while we desperately try to prevent slipping, we prepare our way for another effort with improved methods, and so we go on higher and higher.

[6] R. Marjolin, "François Simiand's Theory of Economic Progress," *Review of Economic Studies*, June 1938.

Both phases then are necessary for progress. If prices always fell, we would have no outbursts of high standards to pin our hopes to. If prices always rose, we would become slack and never improve our methods. Rising prices increase our activity under the spur of profits. Falling prices increase our invention under the spur of losses. So we progress under the beneficent influences of a variable money supply that gives us the boon of cyclical fluctuation. Stabilization would change all that and, for the sake of an uncertain security, deprive us of progress.

Investment must not be discouraged

Perhaps what these cautions in respect to stabilization imply is that private investment, being the principal agent of our progress in the past and of our prospects for the future, should not—must not—be discouraged. Granting that from time to time investment may run at levels that, temporarily at least, cannot be maintained, still in the long run, if the advance of our standard of living is to continue, investment will be the essential means thereto.

Particularly so, if as some economists see the world, the investment opportunities which made the nineteenth century such a "magnificent episode" are facing a decline that was nakedly exposed to view in the depression of the 1930's, and that, though temporarily giving way to the almost feverish expansion of the postwar years, will emerge once more as soon as the deferred demands caused by the war have been met.[7]

It is not, then, any hostility to stabilization as such that prompts these critical attitudes, but a fear lest in choosing the easier or the more popular paths to stability, hindrances to investment might be overlooked.

As Keynes puts it:

> The right remedy for the trade cycles is not to be found in abolishing booms and thus keeping us permanently in a semislump; but in abolishing slumps and thus keeping us permanently in a quasi-boom.[8]

Indeed, when one looks at the poverty of the world, and even at that relatively mild degree of poverty that unfortunately exists in

[7] For the intellectual background of this thesis of "secular stagnation" see Chapter 6, p. 135 and Chapter 16, p. 303.

[8] *General Theory of Employment, Interest and Money*, p. 322.

this country, one may well agree with Lord Keynes that we should avoid putting too much emphasis on increased consumption when there is still much advantage to be obtained from increased investment.[9] One remedy for a situation of underemployment may be found in an increase of consumption. But perhaps a better one would be to increase investment.

This remedy might be found, as Mr. Keynes has suggested, in drastic lowering of the rate of interest, so that investments that lie below the existing level of profitability might be carried on. How this is to be done effectively is not clear. In any case, it would involve, as Keynes puts it, the euthanasia of the *rentier.*

Or, the government might substitute public for private investment as long as the flow of savings tends to outrun the opportunities offered in the latter field. This method seems to be a last resort which, pushed progressively, may dangerously cramp the efficiency and reduce the buoyancy of private investment.

But the most effective means of all would be to encourage by every device the progress of technology. New methods, new resources, and new industries are what is wanted to give outlets to the savings of society. It was the railroads, the electrical industry, and the automobile that, in the past, helped to get society out of depressions and made possible the long rise in the standard of living. The new processes and industries of the future are the best guarantee that these standards will continue to improve. Hence programs of stabilization designed primarily in the interests of security rather than progress may be risky. We must be sure that in the process of removing undesirable fluctuations of industry, we do not encroach on the sources of innovation; we must be sure that fear of overinvestment does not lead to restrictions on expansion in a society in which underinvestment is the real evil.

Suggested Readings on Part III

Sir William Beveridge, *Full Employment in a Free Society* (New York: W. W. Norton & Company, Inc., 1945). The world-famous English economist presents blue-prints for a full-employment society. Note particularly Part IV, "A Full Employment Policy"; and Appendix C, "The Quantitative Aspects of Full Employment," by Nicholas Kaldor.

[9] *General Theory of Employment, Interest and Money,* p. 325.

E. C. Bratt, *Business Cycles and Forecasting*, 3rd Edition, (Chicago: Richard D. Irwin, Inc., 1948). Chapters XX to XXII have a compact analysis of all possible methods of stabilization.

P. H. Douglas, *Controlling Depressions* (New York: W. W. Norton & Co., Inc., 1935). Popular and readable, but scholarly.

A. H. Hansen, *Full Recovery or Stagnation* (New York: W. W. Norton & Company, Inc., 1938).

———, *Fiscal Policy and Business Cycles* (New York: W. W. Norton & Company, Inc., 1941).

———, *Economic Policy and Full Employment* (New York: McGraw-Hill Book Company, Inc., 1947).

These three books by an outstanding exponent of stabilization show the progress of thinking in this field over a decade.

S. E. Harris (Editor), *Post War Economic Problems* (New York: McGraw-Hill Book Company, Inc., 1943).

———, *Economic Reconstruction* (New York: McGraw-Hill Book Company, Inc., 1945). A valuable collection of chapters by various authors, centered on the problems of full employment.

A. C. Pigou, *Industrial Fluctuations* (London: Macmillan and Co., Ltd., 1927). Part II, "Remedies." Professor Pigou of Cambridge exposes various stabilization schemes to his keen and lucid economic analysis.

S. L. Slichter, *Towards Stability* (New York: Henry Holt and Company, 1934). A systematic and incisive analysis of possible measures of control.

Readings in Business Cycle Theory (Philadelphia: Blakiston Company, 1944). Most of the papers in this valuable collection are concerned with cycle theory rather than with control, but two of the essays, "Deficit Spending," by J. H. Williams, and "The Workability of Compensatory Devices," by J. M. Clark bear directly on the problems of stabilization. The book has valuable bibliographies on Fiscal Policy (Section IV D), Monetary Policy (Section V C) and Business Cycle Control (Section XII).

The following books, which occupy a more special field, have already been noted in the particular chapters concerned, but they are here again recommended as of particular value and interest.

J. M. Clark, *Economics of Planning Public Works* (Washington: United States Government Printing Office, 1935). This analysis of the problem of public works, prepared for the National Planning Board, is shrewd, readable, and comprehensive. The best survey of the subject available.

A. D. Gayer, *Monetary Policy and Economic Stabilization* (New York: The Macmillan Company, 1937). A comprehensive study in its particular field.

J. M. Keynes, *A Treatise on Money* (New York: Harcourt, Brace and

Company, 1930), Book VII, "The Management of Money." Most recent literature on money management is heavily indebted to this section of Keynes. Like all his work, it is stimulating, provocative, and amusing.

H. H. Villard, *Deficit Spending and the National Income* (New York: Farrar and Rinehart, 1941). A lengthy account of "multiplier" theory in respect to public expenditures, together with an analysis of the effects of public expenditures under the New Deal.

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