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An Introduction to ECONOMIC ANALYSIS AND POLICY

By

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SECOND EDITION

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PREFACE

IN recent years there have been important developments in Economic Theory—notably in the analysis of Money and Unemployment by Mr. Keynes, and in the theory of Imperfect Competition by such writers as Mrs. Robinson and Mr. E. Chamberlin. Many of these new ideas are not yet available to any but the trained economic theorist; for new scientific work must always at first be stated in technical terms. It is the primary object of this book to expound the whole corpus of Economic Theory without taking any knowledge of technical terms for granted and with full use of the more recent developments. I have not shirked any point in which economic analysis is relevant for the determination of economic policy; and for this reason this book is not always easy to read. But I have tried to write in such a way that any one with patience and the power of clear reasoning can understand it.

In this book I have discussed economic theory with direct reference to the economic problems of the modern world. As a teacher of the subject I have often found that men, who come to economics to find an answer to the pressing problems of the moment, cannot see that the formal analysis of the text-book has anything to do with the real world. Such formal analysis is, however, essential for a full understanding of practical problems, and the rigid text-book analysis must be mastered; but in this book I have attempted to supplement that training by combining it with the direct discussion of economic problems. This method has made it necessary to advocate a particular economic policy.

There is nothing original in this work, which is a transcription of the work of many authors; and it is impossible for me to enumerate fully the writers to whom I am indebted. Nearly every economic author, whom I have read, has directly or indirectly affected this book. But there are certain authors whom I must mention specifically, and I hope that I will be

excused if I have failed to acknowledge direct indebtedness to others. Mr. J. M. Keynes's *Treatise on Money* and *General Theory of Employment, Interest and Money* have inspired the whole of Part I of this book, which has also been directly influenced by the work of Mr. R. F. Kahn; and certain passages in Chapters VI and VIII of Part I have been recast after reading Mr. R. F. Harrod's *Trade Cycle*. The suggestion about the Sinking Fund on p. 45 is taken from evidence given by Professor A. L. Bowley to the 'Colwyn Committee', and is to be found on pp. 323 to 328 of the *Report of the Committee on the National Debt and Taxation*, 1927. Part II has been constructed on the foundations of Mrs. Robinson's *Economics of Imperfect Competition*, Mr. E. Chamberlin's *The Theory of Monopolistic Competition*, and Professor Pigou's *Economics of Welfare*, as well as upon articles by Mr. R. F. Harrod and other authors; while pp. 156 to 164 are a transcription of an argument in Mr. R. F. Kahn's article in the *Economic Journal*, for March 1935, entitled 'Some Notes on Ideal Output'. Chapter VIII of Part II has gained much from articles of Mr. M. Dobb, Mr. H. D. Dickinson, and Mr. A. P. Lerner in the *Economic Journal* and the *Review of Economic Studies*. Part III owes much to Dr. Hugh Dalton's *The Inequality of Incomes* and Mr. Wedgwood's *The Economics of Inheritance*, while Chapter IV of this Part is largely based on the works on Public Finance of Dr. Hugh Dalton, Professor Pigou, Sir Josiah Stamp, and others. In Part IV, pp. 278 and 279 are merely a numerical illustration of the proof given by Mr. J. M. Keynes for a proposition of Mr. F. P. Ramsay in his article in the *Economic Journal* for December 1928, entitled 'A Mathematical Theory of Saving'. Part V is based upon many works on the Theory of Money, as well as upon text-books on International Trade, such as Professor Taussig's *Theory of International Trade* and Mr. R. F. Harrod's *International Economics*.

Mrs. Robinson has read the whole of the manuscript of Parts I to IV, and I am very grateful for the many material

improvements suggested by so able a professional economist. Dr. N. J. Abercrombie has nobly played the part of the intelligent amateur, and his detailed criticisms have greatly improved the exposition. My sister has done the same for Part I and suggested the insertion of an important section. I have been greatly helped by my wife in revising the book. To all of these I would express my sincere gratitude.

HERTFORD COLLEGE, OXFORD. J. E. M.

April 1936.

PREFACE TO THE SECOND EDITION

IN preparing this edition I have corrected some errors of detail; and I should like to take this opportunity of thanking those who have pointed them out to me. I have also altered the emphasis of the arguments on pp. 211 and 272. This last change I have made as a result of reading Professor A. M. Carr-Saunders's *World Population*. This book has so impressed me with the importance of the present population trend that I have added a note at the end of this book, the main purpose of which is to explain the meaning of Mr. Kuczynski's measure 'the net reproduction rate' and to show its bearing upon the argument of Chapter II of Part IV of this book.

J. E. M.

HERTFORD COLLEGE, OXFORD

March 1937.

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INTRODUCTION

BEFORE any economic system can provide the highest possible standard of living, four conditions must be fulfilled.

1. No economic resources, which are willing to work, must stand idle. This problem—the problem of Unemployment or of poverty in the midst of plenty—is discussed in Part I.

2. The available economic resources must be set to work to produce in the greatest possible quantities those products which consumers most desire; this condition will remain unfulfilled, so long as it is possible by producing less of one thing to produce more of another, which consumers desire more urgently. This is the problem of Competition, Monopoly, and Planning, which is the subject of Part II.

3. The income of the community must be distributed among individuals in such a way that the greatest possible satisfaction is obtained from the limited national income. The Distribution of Income is the subject of Part III.

4. The standard of living will not be the highest possible, unless a proper balance between work and leisure is maintained and unless the total population and the total stock of capital are forthcoming in the most appropriate amounts. Part IV discusses this problem of the 'optimum' supply of the factors of production, labour and capital.

If these four conditions are fulfilled, the standard of living will be the highest which it is possible with a given knowledge of industrial technique to obtain from a given supply of natural resources. Parts I to IV are based on the assumption of a self-contained economic system. But in the real world no economy is isolated in this way; for each government must consider the effect of its economic policy upon economic relations with other countries. Part V is therefore devoted to International Economic Problems. This discussion gives rise to no further fundamental economic problem, but shows

merely the international aspects of the four fundamental questions discussed in Parts I to IV.

Some of these problems are more urgent and some are more easily solved than others. The most glaring economic absurdity at present is the existence of unemployed resources in a world in which there are many needs still to be satisfied. For this reason the policy discussed in Part I—together with its international aspects in Part V—is the most pressing and the nearest to 'practical politics'. Fortunately, as we shall see, the solution of this problem needs least governmental interference. This problem should certainly be solved before all others; for, as long as there are unemployed resources, it is possible to produce a larger real income and so to improve every one's standards without causing any one to be worse off. The solution of this problem—unlike the problem of redistributing income—requires no change of heart and offends no vested interests; it requires simply a clearer understanding, and if the argument of Chapter VIII of Part V is correct, its solution should strengthen the economic foundations of world peace. The problem of Part IV, with the exception of the question of the best balance between work and leisure discussed on pp. 259 to 262, is the most far removed from 'practical politics'; for it involves controlling the size of the population.

Opinions are likely to differ as to whether the problem of Part II or that of Part III should take precedence in any practical economic programme. On the one hand, the redistribution of income involves in its clearest form the problem of 'vested interests', since it is impossible to redistribute income without making some persons worse off than before; whereas the solution of the problems raised in Part II will increase the total national income available for distribution, and is therefore theoretically compatible with a rise in every one's standards. On the other hand, as we shall argue in Chapter IV of Part III, income can be safely redistributed by a simple extension of the existing taxing function of government; whereas the problem of Part II cannot be successfully

met without a large measure of government control over industry.

It is not suggested that a definite order of preference can be laid down in any practical economic policy for the solution of the different problems discussed in this book. Different readers will lay the emphasis on different problems; and—as we shall show more than once in the course of this book—there are many reforms which will aid the solution of more than one problem at the same time. But no sound economic policy can tackle every problem at once; and it is, I think, at least certain that the problem of unemployment should immediately receive the greatest emphasis. Beyond this, these introductory remarks may enable the reader to preserve a better balance in his judgement as he moves through the details of the following pages.

PART I
UNEMPLOYMENT

I
CAN THE ECONOMIC SYSTEM WORK?

THE problem to be discussed in this first Part is the existence of unused economic resources, while members of the community still have unsatisfied needs; in other words, we shall attempt to solve the problem of 'poverty in the midst of potential plenty'. Up to Part V we shall assume that this country forms an economic world of its own, cut off from every outside contact. In real economic life it would be madness for an economic policy to be devised to cure unemployment at home, unless it were closely related to the policy adopted in the regulation of international economic relations. But it is impossible to discuss every problem at the same time, however much in the real world the solution of any one affects the solution of every other economic problem; and in Part V it will be shown that a suitable international economic policy can be adopted to fit in with the internal policies suggested in this Part.

The problem which we shall discuss in this Part is something more restricted than the complete problem of unemployment. Even in the best organized society there will be some unemployment, because some industries or firms will be expanding and others will be contracting. It takes time for men to learn new jobs, to move to new districts, or to hear of existing vacancies when they have lost a job; and for this reason some people are out of work at any given moment of time. Something more will be said of this problem in Part II, Chapter VII. But the unemployment problem is of a much more serious nature than this. The demand for labour at times falls off in practically every occupation so that people are unemployed not because they are moving to another job, but because there is no demand for labour in any occupation.

It is the cause and cure of this type of unemployment which is the subject of this Part.

We can start by dismissing the theory that there is some fundamental flaw in the existing monetary or pricing system. It is perfectly true—and must never be forgotten until the problem is solved—that modern communities are not at the present time successfully ensuring that their unemployed resources shall be set to work to make those things which are still needed. But the problem of unemployment is capable of solution without any revolutionary change in our economic system.

The question comes down to this: is it possible, without introducing socialism or a complete change in our monetary system, to distribute among consumers enough money to buy at prices covering their cost of production all the goods and services which we would be able to produce if our resources were fully utilized? It is sometimes held that the existing economic system can never distribute purchasing power sufficient to cover the costs of the output which is produced for sale; but this view is fallacious. Let us take an illustration. The cost of producing consumption goods[1] can be reduced to—

(i) the wages of labour employed in their production;
(ii) the interest to be paid on the capital borrowed by the manufacturers;
(iii) the rent or royalties which the manufacturer must pay to the owners of the land or other property used in the production of consumption goods;
(iv) the cost to the manufacturers of purchasing from other manufacturers or farmers the raw materials necessary to make the finished commodities;

[1] By consumption goods we mean commodities, such as boots, clothes, food, &c., which are sold directly to consumers for the immediate satisfaction of human needs; and by capital goods we shall mean commodities, such as machines, bricks, raw materials, &c., which cannot directly satisfy human needs, but which are used to aid in the production of consumption goods.

(v) a payment which must be allowed for repairing and replacing the machinery and plant which wears out during the process of production of the commodities; and

(vi) a profit to the manufacturers sufficient to induce them to carry on with their production.

It is easier to discuss this matter by taking a simple numerical example. Let us suppose that each of these six items of cost is £100 a year; then in order to sell the annual output of consumption goods at prices which cover their cost of production the manufacturers must receive a total amount of £600 for the sale of their output. In order to produce this output costing £600 they pay £100 to labour during the year, £100 as interest on capital, £100 as rent of land, £100 for raw materials, £100 for the upkeep of their plant, and £100 they regard as income sufficient to repay them for the trouble they have taken. The first three items of cost, namely the £300 paid out in wages, interest, and rent during the year, are clearly available to be spent in this year by the public on the purchase of £300's worth of the product. But what of the other £300? Are the payments for raw materials, for upkeep of plant, and for a profit for the manufacturers of consumption goods, available to be spent on this year's output?

There is no inherent reason why they should not be so available. The £200 spent on raw materials and on the repair and upkeep of machinery have been received by the manufacturers of raw materials or of machinery. They in turn will have paid part of the £200 as wages to labour, part as interest on the capital, and part as rent for the land which they are using to produce raw materials and machines; part of the £200 the manufacturers of raw materials will have kept as the necessary profit for themselves. All these sums have therefore been distributed by manufacturers of raw materials and machines in the form of wages, interest, rent, or profit and are available to be spent on consumption goods. If,

however, the manufacturers of raw materials and machines have themselves to spend something—e.g. £10—on raw materials and machines for the upkeep of their plant, they will have distributed in wages, interest, rent, and profit only £190 out of the £200 that they received. But in this case some other manufacturers of raw materials and machines will have received £10 from those who are producing raw materials and machines for the manufacturers of consumption goods, and this second set of manufacturers will in turn have received £10, which they in turn will have distributed. If this second set of manufacturers has some raw material cost to meet out of the £10 received for the sale of their product, then they in turn will have spent this on the product of a third set of manufacturers. Thus in the end the whole sum will have been distributed in wages, interest, rent, or profit, all available to be spent on consumption goods.

The first five elements in the cost of producing consumption goods—i.e. the £500 paid by the manufacturers of consumption goods in the course of the year in wages, interest, rent, cost of raw materials, and cost of upkeep of machinery and plant—have all therefore directly or indirectly been distributed to consumers as income available for expenditure on consumption goods. It is sometimes objected that, although this is true, yet the whole of this income cannot be available in the hands of consumers to purchase this year's output of consumption goods. For, it is argued, only part of this income will have been distributed to consumers *this* year so as to form an income with which *this* year's output of consumption goods can be bought; the remaining part of this income will have been distributed to consumers *last* year and will already have been spent on *last* year's output of consumption goods. The £300 paid out this year by the manufacturers of consumption goods directly in wages, interest, and rent will be available as the income of consumers to be spent on this year's output. But the £200 spent this year on raw materials and the replacement of machinery will be spent on the purchase of

raw materials and machines which were made last year; and the wages, interest, and rent which were paid for the manufacture of these raw materials and machines will have been distributed last year as income and therefore will already have been spent on last year's output of consumption goods. Thus, the argument concludes, of the £500 of cost, with which we are at the moment concerned, only that part—in our example £300—which is directly distributed as wages, rent, and interest will be available this year to buy this year's output of consumption goods: that part—in our example £200—which is spent on raw materials and the replacement of machines will already have been distributed and spent on consumption goods. Therefore the amount distributed in income this year to buy this year's output is necessarily less than the cost of producing this year's output, with the result that unemployment is bound to ensue.[1]

We may admit that this year £300 is distributed directly by the manufacturers of consumption goods in wages, interest, and rent, and that £200 is spent on raw materials and machines which were produced last year. We may admit also that the income from the production of these raw materials and machines was distributed and spent last year. But it is false to conclude that only £300 can be available this year to purchase this year's output of consumption goods. For *next* year an output of consumption goods will be produced, and the manufacturers of consumption goods will have to purchase raw materials and to repair and replace their machinery next year to produce next year's output. Moreover, the producers of raw materials and machines will realize this and will produce raw materials and machines this year in order to sell them next year to the manufacturers of consumption goods. If the producers of raw materials and machines expect to receive from the manufacturers of consumption goods as much next year as was received this year, no trouble need arise. The manufacturers of raw materials

[1] This, as I understand it, is the essential point in the analysis of Major C. H. Douglas.

and machines will be distributing £200 in wages, interest, and rent to produce raw materials and machines to be sold next year to the manufacturers of consumption goods, and this £200 is available as income this year for expenditure on this year's output of consumption goods. Thus £500 is available as income for expenditure on this year's output of consumption goods.

We have found no inherent flaw in the economic system as far as the first five elements of cost enumerated on pp. 2 and 3 are concerned. All these costs may at least be balanced by an equal income available to be spent on the finished product. But we have supposed that the consumption goods cost £600 to produce; and so far we have allowed for a distribution of only £500 purchasing power to consumers to buy these goods. The remaining element of cost is the manufacturers' profit. The actual amount of profit is a residual item depending upon the difference between the manufacturers' receipts and their other costs. In our example the manufacturers must receive a profit of £100 if they are to carry on production at the existing level. Will they receive this necessary profit of £100? There is no inherent reason why they should not. If the manufacturers themselves spend £100 on consumption goods, the total amount spent on consumption goods will be £600 and this will just cover the cost of producing them, including £100 profit for the manufacturers. On the other hand there is no inherent reason why the manufacturers should not be receiving more or less than £100. If they are themselves spending £150 on consumption goods, the total amount spent on consumption goods will be £650; and if £650 are spent on consumption goods, manufacturers will in fact be receiving a profit of £150. If, on the other hand, manufacturers are spending only £50 on consumption goods, only £550 in all will be spent on consumption goods, so that they will in fact be receiving a profit of only £50.

We may conclude that it is quite possible for the economic system to distribute sufficient purchasing power, but that at any one time it may be distributing more or less purchasing

power than is necessary to buy up the output of finished goods at their cost—the cost including that profit to manufacturers without which they will not continue their production. In the former case manufacturers will be making profits larger than is necessary to induce them to carry on the existing production, and in the latter case they will be receiving less than is necessary. In the former case they will have some incentive to plan for a larger production and they will attempt to employ more labour and to hire more capital for this purpose, so that output will be increased and more resources will be employed. In the latter case manufacturers will be induced to restrict the scale of their production since they are not receiving enough to induce them to continue at the present scale, and they will throw more labour and capital out of employment. If they are just covering their costs and just receiving a sufficient profit to induce them to continue at the present scale they will make no attempt to produce more or less.

We have still to decide what it is that determines whether the distribution of purchasing power is sufficient or not to cover the production, since we have only shown so far that sufficient purchasing power *may* be distributed. In order to develop this part of our discussion it is convenient to examine the argument of those who hold that, if any persons save part of their income, it is bound to be impossible to sell the whole of the output of consumption goods at their costs; for, it is argued, if people spend on consumption goods less than the whole of their income, i.e. less than the total cost of producing consumption goods, the price of consumption goods must fall below their cost of production.

Let us expound this argument by continuing the numerical example used above. Let us suppose that an amount of consumption goods is produced in a particular year, the total costs of which are £600, and that £600 is distributed directly or indirectly in wages, rents, interests, and profit, and is available to be spent on these consumption goods. The argument which we have to consider is that, if those receiving

this income of £600 decide to spend only part of it—say £400—on consumption goods, and to save the remaining £200, then only £400 will be spent on goods which cost £600 to produce. In these circumstances it would appear that the total amount spent on consumption goods cannot cover the cost of producing them, even though sufficient purchasing power is being distributed as income to cover their costs.

But there is still no reason why the economic system should not be made to function successfully. For if people are saving £200 of their incomes, it should be possible for manufacturers who control industrial concerns to borrow the £200 to spend on capital goods in order to develop their concerns. If this is being done, then there is no reason why consumption goods should be sold at prices below their cost of production. For, if £200 is borrowed this year and spent by manufacturers on additional capital goods[1] to develop their capital equipment, those persons who manufacture these additional capital goods will receive £200 in the course of the year as wages, rent, interest, or profit, and they can spend this sum on consumption goods. Again we must conclude that there is no inherent reason why expenditure on consumption goods should fall below the total cost of producing them, even if consumers save part of their income. The system will work so long as sufficient is borrowed for expenditure on additional capital goods.

If the foregoing argument is correct we have shown that the present economic system *may* distribute sufficient purchasing power to cover the total cost of producing consumption goods, even if people save part of their income. But we have not attempted to prove that it must always do so; indeed, in face of the recent depression such a contention would be nonsense. It is quite possible that consumption goods costing £600 are

[1] By the annual expenditure on additional capital goods is meant that part of the annual amount spent in purchasing machines, factories, raw materials, &c., which is not required simply to replace and maintain the machines, factories, raw materials, &c. which are worn out in the course of the year's production. In other words, it means the amount spent in the year on increasing the community's stock of capital goods.

produced this year and that the manufacturers of these goods are receiving only £500 for their sale. Then the total amount distributed directly or indirectly in income in respect of the production of these goods will only be £500. There is nothing impossible or, indeed, improbable in such a situation in which the producers of consumption goods will not be covering their total costs.

The argument and example of the last pages help to show how it can be ensured that sufficient is spent on consumption goods to cover the total costs of their production. The producers of consumption goods may themselves spend on consumption goods less than is sufficient to cover their costs. But this deficiency of expenditure can be made up, if a sufficient amount is borrowed and spent on additional capital goods. For if the producers of capital goods have large enough incomes, their expenditure on consumption goods will make good the deficiency. Thus suppose that there is an output of consumption goods costing £600 and that the producers of these goods, because they wish to save part of their income, will only spend £400 themselves on the purchase of consumption goods. Then, in order that £600 in all should be spent on consumption goods, a further £200 must be spent on them by other people. In other words, the producers of additional capital goods must be receiving a sufficient income to cause them to spend £200 on consumption goods. If the producers of additional capital goods wish themselves to save one-third of their income and to spend only two-thirds of it on consumption goods, then in order that £200 should be spent by them on consumption goods they must be receiving £300 for the sale of additional capital goods. If, instead of £300, only £270 were being spent on additional capital goods, then the producers of additional capital goods would be receiving only £270, of which they would be saving one-third or £90 and spending two-thirds or £180 on consumption goods. In this case the total expenditure on consumption goods, costing £600 to produce, would only be £580, of which £400 represents expenditure by the producers of consumption goods

and £180 expenditure by the producers of additional capital goods.

This analysis enables us to conclude that there are only two fundamental ways in which the total expenditure on consumption goods can be made to increase: either more must be spent on additional capital goods; or else, without any diminution in the amount spent on additional capital goods and so without any diminution in the incomes of the producers of these goods, income receivers must spend a larger proportion of their income on consumption goods. Let us take as an illustration the numerical example which we have already given. Suppose that consumption goods costing £600 are being produced, and that £270 are being spent on additional capital goods, and suppose further that the producers of consumption goods are spending £400 and the producers of additional capital goods are spending £180 on consumption goods. Then the total expenditure on consumption goods is £580. There are two ways in which this expenditure on consumption goods may be increased by £20. In the first place, if expenditure on additional capital goods and so the incomes of the producers of these goods could be increased to £300, they would spend £200 instead of £180 on consumption goods (if they continued to spend two-thirds of their income). Secondly, suppose that the amount spent on additional capital goods remained unchanged at £270; if now the producers of consumption goods spend £410 instead of £400 of their income on consumption goods and if the producers of additional capital goods spend £190 instead of £180 on consumption goods, then the total expenditure on consumption goods would be increased from £580 to £600 and this would be sufficient to cover the cost of producing these goods.

In order that the problem of unemployment may be solved it is necessary that the total amount spent on the community's output of consumption goods or of additional capital goods should be great enough to induce the manufacturers of these goods to extend their output until they have absorbed the unemployed resources of the community. If, therefore,

there is unemployment, it is necessary to do one of three things.

(a) More money must be spent on additional capital goods. This will directly increase the money demand for additional capital goods, will raise their price in relation to their cost of production, and will induce the manufacturers of these goods to employ more men to increase their output. But as we have just shown it will do more than this. It will increase the total incomes of those producing these goods, and if it is not accompanied by a rise in the proportion of income saved it will also cause expenditure on consumption goods to rise. This in turn will raise the price of consumption goods in relation to their costs and will induce the manufacturers of consumption goods also to employ more men to increase their output. Chapters II to V of this Part are devoted to a discussion of the ways in which expenditure on additional capital goods can be increased.

(b) People must be induced to spend a larger amount on consumption goods without there being any corresponding reduction in the amount spent on additional capital goods. Measures designed to bring this about are discussed in Chapter VI of this Part.

(c) It is equally clear that a reduction in the cost of production per unit of output of consumption goods or of additional capital goods will increase the profit of manufacturers and induce them to employ more men to increase their output, provided that such a reduction in costs of production is not accompanied by a similar reduction in the total amount spent on consumption goods and on additional capital goods. The possibility of measures of this kind is discussed in Chapter VII of this Part.

II

THE RATE OF INTEREST AND EXPENDITURE ON ADDITIONAL CAPITAL GOODS

WE concluded in the last chapter that an increase in the amount spent on additional capital goods would indirectly increase the demand for consumption goods. In this chapter it will be shown that a fall in the rate of interest will increase the total amount spent on additional capital goods, so that if it is possible to lower the rate of interest it will be possible thereby to increase the demand for every type of commodity. Expenditure on capital development may be divided into three groups. In the first place, manufacturers may spend money on new machinery or plant to extend their existing equipment or to set up a new firm. Secondly, the state, local authorities, or other public bodies may spend money on the development of the capital equipment necessary for the provision of such communal services as prisons, hospitals, schools, or roads. Thirdly, individuals may spend money on new capital goods, such as houses, which will serve their needs directly in the future.

Let us suppose that a manufacturer has to decide whether it is profitable for him to borrow money in order to put in a new machine to develop his business. He will have to consider two things before coming to a decision:

(i) what difference it would make to the profitability of his business if he had the new machine, and

(ii) at what rate of interest he can borrow the money to instal the new machine.

(i) If he had the new machine he could produce more, and could therefore expect to receive a larger amount of money for his sales. Let us suppose that if he had the new machine he could so increase his output that he would receive £50 more each year for the sale of his product. At the same time he will have to spend more on raw materials, on wages, and on

repair and depreciation of the new machine each year. Suppose that these additional costs will amount to £45 a year. Then he will make a net additional profit of £5 a year. If the machine costs £100 to purchase and instal, he will make a rate of profit on the cost of the machine of 5 per cent. per annum.

(ii) On the other hand, he will have either to borrow the money to buy the machine or else buy it with his own money, which he could otherwise have lent at a certain rate of interest. If the rate of interest at which money can be borrowed and lent is 6 per cent. per annum it will clearly be unprofitable for him to instal the machine. But if the rate of interest is 4 per cent. per annum, it will pay him to instal the machine, since he can make a profit of 5 per cent. per annum on £100 borrowed at 4 per cent. per annum. We now come to a conclusion of fundamental importance: *A fall in the rate of interest at which money can be borrowed, or a rise in the rate of profit which can be expected on any capital development, will cause an increase in the amount of additional machinery and plant which a manufacturer will find it profitable to instal.*

In any firm there are probably at any one time a number of different ways in which it would be possible for the manufacturer to extend his plant. Some extensions may be reckoned to earn a high rate of profit; others may be reckoned to earn a slightly lower rate of profit, and so on. For this reason, as the rate of interest falls, more extensions will become profitable and more money will be spent on capital development. And in this connexion it is important to realize that a business, even if it is doing so badly that it is not employing all the capital equipment which it already possesses, may find it profitable to invest in new capital equipment if the rate of interest is sufficiently low. Such a business will not, of course, find it profitable to invest in machinery of the kind which it already possesses; but with a low rate of interest it may find it profitable to invest in machinery of an entirely new type. For instance, in a depressed coal mine much equipment may be lying idle, but it may be

possible to invest in mechanical coal-cutters which the mine does not already possess. If the owners of the mine expect to make 3 per cent. on an investment in this type of machinery it will pay them to do so as soon as the rate of interest falls below 3 per cent. even though it may not pay them to use fully the other types of equipment which they already possess.

A similar argument will apply when considering whether to set up a new company or a new firm. The promoters of a new company must first compare the rate of profit to be expected upon the new company's capital with the rate of interest at which money can be lent or borrowed; and as the rate of interest falls there will be a larger and larger number of industries in which it becomes profitable to spend money on new capital goods for the formation of new business units.

The second type of expenditure on capital goods is also dependent upon the rate of interest. In the modern world public authorities must necessarily undertake a large amount of expenditure on capital development which cannot be left to private enterprise. Roads, schools, prisons, battleships, street-lighting, drainage, and water supply are instances of such expenditure. In some cases it is impossible to assess the rate of profit which the authority concerned can make on the investment. It is, for example, not easy to say what rate of profit the state expects on the erection of a new prison or lunatic asylum. In other cases for purposes of social policy the actual rate of profit which could be earned on the investment is deliberately neglected, although it is capable of being reckoned. A new school, if it were run simply as a profit-making institution, would earn a definite rate of profit, but, for reasons at the moment irrelevant, this consideration is not taken into account. Nevertheless, the amount which public authorities spend on such capital development is very largely affected by the rate of interest at which money can be borrowed; for a fall in the rate of interest will reduce the future burden on the rates, which is necessary to meet the interest on the money borrowed for any particular scheme of development.

As an example of the third type of expenditure on capital development, namely expenditure on capital goods which provide direct services to individuals, we may take expenditure on private houses. Here again the rate of interest will be very important in deciding the amount of expenditure undertaken, whether the building of the house is undertaken by a public authority, by a speculative builder, or by the individual householder himself. Suppose that it costs £100 to build a one-room house, £200 to build a two-room house, £300 to build a three-room house, and so on. (It is not pretended that these figures are realistic; they are chosen merely to provide a simple illustration of the principle involved.) If an individual can borrow money from a building society at 10 per cent. per annum or if he himself can lend money at 10 per cent., then each room will cost him £10 a year in interest, since he must borrow £100 at 10 per cent. or refrain from lending £100 at 10 per cent. for each room in his new house. If, however, the rate of interest is only 5 per cent., then he must pay in interest to the building society or give up in interest on his savings only £5 a year for each room. Thus the lower the rate of interest the greater will be the number of people who can afford to build themselves houses and the larger will be the size of the houses which are built.

The effect is the same if the house is built by a public authority or by a speculative builder. If the public authority or the speculative builder decides to build a three-room house costing £300 they must either borrow the £300 or refrain from lending to others £300 which they have saved. If the rate of interest is 10 per cent. then the building of the house costs them £30 a year in interest, and in order that they shall find it worth while to build the house they must let it at a rent which will cover this £30 in annual interest. But if the rate of interest were only 5 per cent., then it would be worth their while to build the house costing £300 so long as they could let it at a rent which covered £15 a year in interest. Thus the lower the rate of interest, the lower will be the rents

at which new houses can profitably be let. But the lower the rents of houses, the more houses people will wish to hire and the larger will be the houses which they can afford, so that a fall in the rate of interest is bound to increase the total amount spent on house construction. This argument is not, of course, seriously modified if the state or public authorities subsidize the cost of houses. For if a given subsidy is paid, it will cover part of the cost and so part of the rent of the house. But it still remains true that, the lower the rate of interest, the lower will be the rent at which the subsidized house can be let to cover that part of the cost of its construction which is not already met by the subsidy.

We have thus shown that a fall in the rate of interest will increase expenditure on capital development of every kind. But the effect of changes in the rate of interest on the total expenditure on goods is cumulative, so that this form of control is more effective than is apparent at first sight. If there is a reduction in the rate of interest at which money can be borrowed, then more money will be spent on capital development. But this will not only increase the demand for additional capital goods but will also increase the incomes of the producers of these goods. These producers may save part of their increased incomes, but part they will spend on consumption goods. But this is not the end of the story. The producers of consumption goods will be receiving greater incomes; and, though they may save part of their increased incomes, they will in turn spend part of the increase in their incomes on consumption goods. Thus a secondary increase in the demand for consumption goods will take place, which will again increase the incomes of those producing consumption goods, part of which may be spent on consumption goods, causing a tertiary increase in the demand for such goods. In this way the demand for consumption goods will increase cumulatively by a series of ever-diminishing increases in demand, leading to increased incomes and increased expenditure. Such increases in expenditure on consumption goods will have a further effect upon the demand for addi-

tional capital goods; for the increased expenditure on consumption goods will raise the price at which such goods can be sold and so will raise the profit which can be made on the use of capital for the production of consumption goods. The result of this will be a further increase in the amount which it is profitable for the producers of consumption goods to spend on capital development, and the circle of increasing expenditure and profits will be started again.

These cumulative effects make the rate of interest a very important instrument in controlling the total demand for commodities. However complex these reactions may be, one important conclusion can be drawn from our analysis; a fall in the rate of interest will always tend to increase the demand for capital goods and consumption goods. If, therefore, the rate of interest can be lowered whenever there is unemployment, we shall have found one effective way in which total expenditure on capital development and on consumption goods can be adjusted to maintain full employment. In the next chapter we show that the rate of interest can be lowered by appropriate banking policy.

III

THE FUNCTION OF THE BANKS

WE may best show how the banks can control the rate of interest by discussing the English banking system. Other banking systems differ from the English system in their conventions and legal restrictions, but the essential features are much the same everywhere.

We shall see later that it is through their control of the amount of money that the banks control the rate of interest, and it is necessary, therefore, to see how the English banking system can control the amount of money in existence. This we can do by examining the balance-sheet of a bank. A bank's balance-sheet, like the balance-sheet of any other concern, is bound to balance; that is to say, it is drawn up in such a way that the items on the assets side of the account are exactly equal to the items on the liabilities side. The liabilities of an ordinary joint-stock bank, such as the Midland Bank, are composed of—

(i) Capital. This is the money which has been borrowed for the formation of the bank and which the bank therefore owes to the subscribers.

(ii) Surplus. This is the profit made by the bank but not yet distributed in dividends to the owners of the bank's capital. This item again is a liability, because the bank owes this money to the owners of the bank's capital. It is this item which must be adjusted to make the bank's balance-sheet balance. If an asset of the bank—e.g. a loan which the bank has made and which is therefore owed to the bank—disappears because the bank's debtor goes bankrupt, then the bank will lose so much money, and the bank's surplus will be written down on the liabilities side of the account when the assets of the bank are written down by the loss of this loan.

(iii) Deposit Liabilities. This is money which members of the public have deposited with the bank and which the bank therefore owes to the public. This third item in the liabilities of the bank is much the most important both in size and also in its effect upon the economic system.

The assets of the bank can be divided into two main heads, which require a number of subdivisions.

(i) Cash. The bank will hold a certain amount of cash in order to meet the requirements of any of its depositors who wish to change the money they have deposited with it into cash. The bank counts as cash not only the notes and coin in its tills, but also its deposits with the Bank of England, since it can cash these deposits at a moment's notice. An ordinary joint-stock bank in this country holds an amount of cash equal to approximately 10 per cent. of its deposit liabilities to its customers, because practice has shown that if this sum is held in cash the bank will always be able to cash any amount of its deposit liabilities that may be required at any one moment and still have a large margin of safety—although if everybody wished to cash all their deposits at the same time, the bank would be in a position to meet only one tenth of its liability.

(ii) Loans. The rest of the money lent to the bank—i.e. that amount of its capital, its surplus, and its deposit liabilities which it does not keep at hand in cash—the bank will lend to others to earn interest. These loans may take many forms. Some may be made for very short periods to other financial institutions. Some will be lent to the government by the purchase of government securities; these may take the form either of Treasury Bills, which are promises made by the government to pay a certain sum of money in a few months' time, or of long-term government securities such as 'Consols' or 'Conversion Loan', which are

promises to pay a certain amount of interest every year, together with the promise in some cases to pay back the sum borrowed after a definite term of years. Other loans by the bank may take the form of bills 'discounted for' or bought from traders, these being promises on the part of some traders to pay certain sums in a few months' time. Finally the bank will have 'advanced' certain sums to producers, these sums being direct loans at a certain rate of interest to enable the producers to carry on their business.

What has been said is true not only of one joint-stock bank but of all banks. We may therefore draw up a combined balance-sheet of all the ordinary commercial banks, of which in England the 'Big Five'—Lloyds, the Midland, Barclays, the Westminster, and the National Provincial—are the most important. Such a combined balance-sheet is shown in round figures in Table I. It will be observed that the banks are represented as keeping 10 per cent. of their deposit liabilities to customers covered with assets in the form of cash.

TABLE I

A Combined Balance-Sheet of the Joint-Stock Banks

Liabilities	(£ millions)	*Assets*	(£ millions)
(*a*) Capital	75	(*d*) Cash	
(*b*) Surplus	25	(i) Notes and Coin	100
(*c*) Deposits	2,000	(ii) Balance with Bank of England	100
		(*e*) Short-term loans to other financial institutions	100
		(*f*) Discounted bills	400
		(*g*) Investments	400
		(*h*) Advances to industry	1,000
	£2,100		£2,100

To complete our picture of the banking system it is neces-

sary to discuss the Bank of England. The Bank of England has to regulate the issue of bank-notes, which form the main part of the cash used by the country in its transactions; it is the government's banker in the sense that the government keeps its deposit account with the Bank of England; and, finally, as we have already seen, it holds the balances, which the joint-stock banks have deposited with it as part of their cash reserves, and which we have represented in (*d*, ii) of Table I as being £100 millions. The Bank of England is divided for the purpose of its account into two departments, the first being the Issue Department, which is concerned simply with the issue of notes, and the second the Banking Department, which is concerned with the rest of its business. By law the Bank of England is allowed to print and issue from its Issue Department an amount of notes equal in value to the amount of gold which it holds plus a fixed sum of £260 millions. This fixed sum is called the Fiduciary Issue, and is backed by government securities. Thus if the Bank of England holds £190 millions of gold, it may issue notes equal to £190 millions plus £260 millions, or £450 millions in all. On the assets side in the Issue Department the bank will show £190 millions in gold and £260 millions in securities, which together will cover the £450 millions notes issued, which sum will appear on the liabilities side in the Issue Department. But not all of these notes will be 'in circulation', i.e. in the hands of the public or of other banks; if £400 millions of notes are in circulation, £50 millions will remain in the hands of the Bank of England, issued from the Issue Department but not yet circulating in the hands of the public. These £50 millions notes being a liability of the Issue Department, will be paid into the Banking Department, where they will be held as a cash asset, with which the Bank can cash its deposit liabilities to the government or to the other banks. The other assets of the Banking Department will be made up of Discounted Bills and Securities. On the liability side in the Banking Department will appear the Bank's Capital, its Surplus or undistributed profits, and

finally its Deposit Liabilities, whether these be to the government, the commercial banks, or to others. The Bank of England's balance-sheet is illustrated in Table II.

TABLE II

A Balance-Sheet of the Bank of England

ISSUE DEPARTMENT

Liabilities	(£ millions)	*Assets*	(£ millions)
(*a*) Notes issued:		(*e*) Gold	190
(i) in circulation	400	(*f*) Securities held against Fiduciary Issue	260
(ii) held in the Banking Department	50		
	£450		£450

BANKING DEPARTMENT

(*b*) Capital	15	(*g*) Notes issued but not in circulation	50
(*c*) Surplus	5	(*h*) Discounted bills	10
(*d*) Deposit Liabilities		(*i*) Securities	120
(i) to the government	30		
(ii) to the banks	100		
(iii) to others	30		
	£180		£180

We are now in a position to see how the Bank of England can control the amount of money in existence. If it wishes to increase the amount of money, it will purchase securities from the public on the stock exchange. Let us suppose that the Bank buys £1 million worth of securities on the stock exchange; it will pay for these by creating a deposit on which the seller of the securities can draw for payment. Thus the value of the securities held by the Bank of England on the assets side of the Banking Department will go up by £1 million, and at the same time its deposit liabilities will go up by a similar amount; items (*d*, iii) and (*i*) in Table II will both go up by £1 million. But those who have sold the securities will in all probability bank with the joint-stock banks, and in this case they will pay by cheque the deposit,

which they now hold in the Bank of England, into their accounts with the joint-stock banks. The effect of this payment is to increase the deposit liabilities of the joint-stock banks by £1 million, since those who have sold the securities in the first place have deposited this sum with the joint-stock banks; at the same time the deposits of the joint-stock banks with the Bank of England go up by the same amount, since the £1 million deposit with the Bank of England has been paid to the joint-stock banks. The effect of this payment on the Bank of England's account is therefore simply to decrease the Bank's deposit liability to the public (item (*d*, iii) of Table II) by £1 million so that it falls to its previous figure, while the Bank's deposit liability to the joint-stock banks (item (*d*, ii) of Table II) rises by £1 million. The effect on the joint-stock banks' account is, however, more important. The deposit liabilities of the joint-stock banks to the public will have risen by £1 million and their cash assets in the form of deposits with the Bank of England will have risen by a similar figure; items (*c*) and (*d*, ii) in Table I will both have risen by £1 million. We saw, however, that the joint-stock banks usually keep a proportion of 10 per cent. of their deposits covered by cash assets; but in this new situation they will be holding cash equal to a larger proportion of their deposits than 10 per cent. For the proportion would only remain 10 per cent. if their deposit liabilities rose by ten times as much as their cash assets.

In order to reduce their reserve ratio to 10 per cent. again the joint-stock banks will themselves attempt to lend more or will invest their spare cash in securities. If the joint-stock banks increase their loans or their holding of securities, both their assets and their deposit liabilities will be increased; for they will pay for the new securities—or will make the new sums which they lend available to the borrowers—by adding these sums to the deposits of those who are selling securities to them or borrowing from them. So long as people do not wish to cash any of these new deposits but only to make cheque payments, the joint-stock banks will not lose any of

their extra cash assets. In these circumstances they will go on lending more or buying more securities until the increase in their deposit liabilities is £10 millions, or ten times the increase of £1 million in their cash assets. In other words, they must buy securities or make new advances to the sum of £9 millions.

It has been shown that if the Bank of England buys £1 million securities, the joint-stock banks will increase their deposit liabilities by £10 millions and their advances or their holding of securities by £9 millions. But this is only true with two important provisos. In the first place the joint-stock banks can nullify the action of the Bank of England by allowing their reserve ratio to rise, when a purchase of securities by the Bank of England increases their cash reserves. In this case their deposit liabilities and their own holding of securities need not rise by the extra £9 millions required to keep their reserve ratio constant.

In the second place the public may offset the effect of the Bank's action, if it cashes part of its deposits with the joint-stock banks. If the public decide to cash £1 million of their deposits, the joint-stock banks must pay out £1 million in notes and at the same time can cancel £1 million of their deposit liabilities to the public; items (*c*) and (*d*, i) in Table I will fall by £1 million. This in itself will reduce the reserve ratio of the joint-stock banks below 10 per cent., and to preserve this ratio they must reduce their deposit liabilities by selling securities or demanding the repayment of loans worth £9 millions. The Bank of England cannot prevent people from cashing their deposits with the joint-stock banks, but it has the technical power to offset any action of this kind by the public. For so long as there are no limits to the amount of securities which the Bank of England can purchase, it can increase the cash reserves of the joint-stock banks by more than the amount of cash withdrawn by the public.

But a limit may be set to the amount of securities which the Bank of England can purchase, if the amount of notes which it can issue is legally restricted. For suppose that the

public cash part of their deposits with the joint-stock banks and that the Bank of England offsets this by purchasing securities. When the joint-stock banks pay out cash to their depositors, their holding of notes (item (*d*, i) in Table I) will fall; and when the Bank of England purchases securities, the balances of the joint-stock banks with the Bank of England (item (*d*, ii) in Table I) will rise. But the joint-stock banks will wish to hold a certain amount of their cash in the form of notes, and when their holding of notes falls and their balances with the Bank of England rise, they will probably cash part of these balances. This will cause the Bank of England's deposit liability to the joint-stock banks ((*d*, ii) in Table II) to fall, and will reduce by the same amount the notes held by the Bank of England as an asset in its Banking Department (item (*g*) in Table II). But as the Bank of England is legally allowed to print only an amount of notes equal to £260 millions plus the amount of gold held by the Bank, and as the issue of notes from the Issue Department is always the maximum legal issue, the Bank cannot put more notes into circulation than it holds in the Banking Department. If, therefore, the public draws notes from the joint-stock banks, which in turn draw notes from the Bank of England, the Bank of England cannot allow this to go beyond a certain point. In consequence the Bank of England may be unable to increase the amount of money by buying new securities in a situation which really requires an increase in the amount of money, simply because it knows that if it did so the public would want to hold more notes and that it could not provide extra notes without exceeding the maximum legal issue.

We may conclude that if the Bank of England is to have full power to control the amount of money in all circumstances, it must be assured of two things. In the first place, it should be certain that the joint-stock banks will not considerably increase or decrease their cash reserve ratio; otherwise a purchase or sale of securities by the Bank of England may be offset by an increase or decrease in the reserve ratio of the joint-stock banks. In the second place, the Bank of

England should be free from any legal restriction on the size of the note issue. These two conditions could probably be fulfilled with relatively little change in the present banking system. In the next chapter we shall revert to the question of the reforms which are necessary to give the Bank of England full control over the amount of money. At the moment we shall assume that the Bank of England has full control over the amount of money, and shall proceed to show how this control can be exercised in order to raise or lower the rate of interest.

We have already seen that if the Bank of England wishes to increase the amount of money it will buy securities and that in consequence of this the joint-stock banks will purchase securities or extend their advances to industry to prevent their cash reserve ratio from rising. The purchase of securities by the Bank of England and by the joint-stock banks will cause the rate of interest to fall. The increased demand for securities on the stock exchange will raise their price. For the banks can only induce people to sell securities by offering a higher price for them. A rise in the price of fixed interest securities is equivalent to a fall in the rate of interest, at which money can be lent or borrowed. This can be best explained by means of an illustration: 2½ per cent. Consols are a government security, which gives their owner £2½ a year for every block of these securities worth nominally £100. If the price of this security nominally worth £100 falls to £50, one could obtain an income of £2 10*s*. a year by investing £50 in Consols; in other words the rate of interest would be 5 per cent. per annum. If the price of these securities rose from their nominal value of £100 to £200, then one would have to pay £200 to obtain an income of £2 10*s*. a year; or the rate of interest would have fallen to 1¼ per cent.

The purchase of government securities by the banks with newly created money will, as we have shown, directly raise the price of these securities and so lower the rate of interest yielded by them. But such action will indirectly lower the

rate of interest on other forms of security. Suppose that the yield on government securities is 5 per cent. and the yield on industrial securities is 6 per cent. If the banks now purchase government securities with new money, and so drive up their price, so that the yield on them falls to 4 per cent. this will indirectly raise the price of and lower the yield on industrial securities. The people who have sold the government securities to the banks for new money will probably not wish to hold all this money idle in the form of deposits with the banks, where they obtain a relatively low rate of interest. They will seek to purchase securities with the money and may be tempted to purchase industrial securities which still yield 6 per cent. in place of the government securities, on which the yield is now only 4 per cent. This purchase of industrial securities will raise their price and so lower the rate of interest yielded by them. But now the people who have sold industrial securities will be holding the new money, and they in turn will not wish to hold it idle but will purchase other industrial securities, the price of which has not yet risen and the yield on which is still relatively high. Thus by a series of repercussions the price of all securities will rise in harmony with the price of government securities, and the rate of interest on industrial securities, i.e. the rate of interest at which industrialists can borrow by the issue of new securities, will fall.

The joint-stock banks can increase their deposits not only by buying securities but also by lending more in direct advances to industry; and in order to induce people to borrow more they must offer to lend at lower rates. So that in this case again an increase in the amount of money can only take place if the banks lower the rate of interest, though it will be the rate of interest on advances to industry and not on government securities which is directly affected. A lowering of this rate of interest will probably not cause a very considerable increase in industrial borrowing directly from the banks. For industrialists borrow from the banks mainly to finance their holding of stocks of finished goods, of raw materials,

and of goods in process of manufacture rather than for extensions of their machinery or plant. The amount of stocks held by industrialists is probably little affected by the rate of interest at which they can borrow money from the banks for this purpose, but is mainly dependent upon the demand for their products. The interest paid by industries on the money which they have borrowed to purchase stocks is usually only a small proportion of their costs of production, and a fall in the rate of interest on such loans will have little direct effect upon the amount which they will borrow. When, therefore, the banks increase the amount of money, they will have to rely in the first instance mainly on the purchase of securities. But when this action has caused the rate of interest on long-term industrial securities to fall, it will stimulate expenditure on capital development and will increase the demand for capital goods and for consumption goods in the way described in the last chapter. When this happens, manufacturers will have an incentive to produce more and will therefore wish to borrow more from the banks to hold larger stocks. Thus, indirectly, an increase in the amount of money, brought about in the first place by a purchase of securities by the banks, will after a time enable the banks to lend more in direct advances to industry.

If the argument of the preceding chapters is correct the primary object of the Bank of England in times of general unemployment should be to purchase securities, in order to reduce the rate of interest and so to stimulate expenditure on capital development.[1] This involves a revision of many popular and orthodox ideas about monetary policy. Much greater and more sudden variations in the rate of interest may be necessary than have been usual in the past, if economic policy is to maintain a high level of employment. A very great deal can be done not only by the actual policy adopted

[1] It must be remembered that in fact the policy of the Bank of England will vitally affect economic and financial relations with other countries. In Part V we shall conclude that even when these effects are considered the primary object of the Bank of England's policy should be that stated here.

by the Bank of England but by public explanation of the object of this policy. The rate of interest on securities always approximates to the rate which people expect to rule in the future. If they expect the rate of interest on securities to be 5 per cent. in the future, it will be difficult to lower the rate much below this figure, even if the banks purchase very large amounts of securities; for as soon as the price of securities rises so that the yield on them is appreciably below 5 per cent., people will sell securities in large amounts to the banks. They will then hold idle deposits of money in the expectation that yields will rise and security prices fall again in the near future, so that the securities can be bought back again at a profit. The Bank of England can, to a large extent, meet difficulties of this kind by making its intentions clear. Suppose, for example, that a slump has started: the Bank might state publicly and in unambiguous language that it was determined to reduce yields on securities rapidly from a 5 per cent. to a 3 per cent. basis; that it would almost certainly not allow yields to rise above 3 per cent. in the near future and would reduce them still further, if such action proved necessary to absorb labour; that it had the power to reduce interest rates by increasing the supply of money; that it would increase the supply of money, however great the increase might have to be, in order to achieve its object; and that this was practically the sole object of its present policy. Such a declaration would cause people to adjust their expectations about interest rates much more easily, and would greatly diminish the extent to which the banks would have to purchase securities to lower interest rates by a certain amount.

IV

THE CONTROL OF BANKING POLICY

WE have concluded that the banks should increase the amount of money and lower interest rates when there is general unemployment. In this chapter we shall discuss the degree of control which the state must exercise over the banks to ensure that this policy is carried out. In particular we must decide whether it is necessary to nationalize the Bank of England or the joint-stock banks. There are three arguments which can be advanced in favour of the nationalization of the banks; these arguments must be clearly distinguished, for only one of them is relevant to our present problem.

The first argument is that it is wasteful and inefficient to have five large separate joint-stock banks, each with a separate office in each locality. It is argued that if the banks were nationalized and all the banking business in each locality were concentrated in one establishment, the business of banking could be carried out at a smaller cost, since a smaller number of buildings, clerks, &c., would be needed to carry out the same total amount of business. This argument applies to many other forms of business. It is equally arguable that there are too many separate shops in a given locality, or too many separate concerns producing electric fittings for these fittings to be produced as efficiently as possible. These arguments may be valid, but they have no direct connexion with the adoption of a banking policy designed to prevent unemployment. Such arguments will be examined in Part II, but they are irrelevant here.

Secondly, it is argued that the banks make unduly large profits and should therefore be owned by the state, to whom such income should belong. This argument again may be true, but it applies with equal force to the national ownership of the capital invested in any profitable industry. It will be examined in Part III, in which the distribution of income is

discussed. The argument has no direct connexion with the question whether the banks can be made to carry out the policy already suggested for the prevention of unemployment.

Thirdly, it is argued that unless the banks are nationalized it will be impossible to ensure that they adopt the policy of expansion, which is necessary to prevent unemployment. It is this argument with which we are now concerned.

It is, of course, essential that in times of unemployment the Bank of England should adopt the appropriate policy of purchasing securities and of announcing to the public its intention to reduce the rate of interest. It is probable, however, that the Bank of England would with its present constitution adopt any policy upon which the government insisted; and it must not be forgotten that in order to cure unemployment by banking policy it does not matter at all who controls or owns the Bank of England or who receives any profit made by the Bank. All that matters is what policy the Bank adopts in the purchase and sale of securities. If the Bank of England will adopt the policy of the government, there is no reason to change its constitution for our present purpose. If, however, the Bank of England should refuse to adopt the government's monetary policy, then the government must enforce its policy by taking the power to appoint the governor and directors of the Bank. As a first essential point we must assume that the Bank is either willing to adopt the appropriate monetary policy or that the government is in a position to insist upon the adoption of this policy.

We are left with the more difficult question whether the Bank of England is itself in a position to enforce its monetary policy. There are four possible difficulties which the Bank of England may encounter. It may be prevented from carrying out this policy—

(a) because of its effects upon the foreign exchanges and its gold reserves;
(b) by the legal restrictions upon its right to issue notes;
(c) by the action of the joint-stock banks;

(d) by the fact that this policy would make it impossible for the banks to cover their costs.

The first difficulty cannot be discussed here, because it is impossible to deal with the effects of internal monetary policy upon the rate of exchange and upon the amount of gold exported from the Bank of England without a full discussion of international economic problems. An attempt to meet this point will be made in Part V of this book.

The second difficulty we have already pointed out in the previous chapter (pp. 24 and 25): An expansion in the amount of money might cause the public and the joint-stock banks to wish to hold an amount of notes greater than the maximum legal issue, and in this case the Bank of England would be forced either to break the law or to abandon its policy of expansion. The Bank of England is, however, allowed by law to issue a greater amount of notes for a certain period of time without the sanction of Parliament, if it obtains the permission of the Treasury. But in the modern world any legal restriction on the power of note issue is an anachronism. For there is now little real difference between notes issued by a bank and a bank's deposit liabilities. Both are forms of money held by the public, used for different types of payment, and both are liabilities of the bank. If it is the main function of the banks to create more money when general unemployment exists—whether in the form of notes or of deposits—the maintenance of special laws relating to the note issue is pointless. The simplest solution would be to restrict the right to issue notes to the Bank of England, but to give it complete legal freedom in the amount issued, and simply to ensure that it varied the amount of money in such a way as to maintain a high level of employment. If this were done, any cashing of their deposits by the public, which led to a fall in the joint-stock banks' reserves of notes, could be offset by a purchase of securities by the Bank of England with new notes, which would be paid into the joint-stock banks.

The third difficulty is that the policy of the Bank of England may be offset by the joint-stock banks, if they vary the proportion between their deposit liabilities and their cash reserves. For, as we saw in Chapter III (p. 24), if the joint-stock banks allow their cash reserves to increase without appropriately increasing their deposit liabilities they can offset any purchase of securities by the Bank of England. It would not be necessary to socialize the joint-stock banks, so long as it could be ensured that they do not allow their cash reserve ratio to vary very greatly; this assurance might be obtained by simple agreement with these banks, since it is their normal practice to maintain fairly constant reserve ratios; or if this was not possible, the same result might be achieved by legislation requiring the joint-stock banks to provide daily figures of their deposits and cash reserves and by imposing heavy taxation on any bank which allowed its reserve ratio to exceed, say, 12 per cent. or fall below, say, 9 per cent. for more than a certain number of consecutive days.

The final difficulty which might stand in the way of the adoption of the proper monetary policy by the Bank of England is the possibility that it would make the banks unable to cover their costs. The banks are bound to incur considerable running expenses, and can only meet these expenses by the difference between the yield which they earn on their assets and the interest which they pay on money deposited with them. If interest rates are reduced to a very low figure it might become impossible for the banks to meet these expenses. Moreover, if the banks are properly pursuing the policy of buying government securities during a slump, even if their price is already high, they may be involved in some capital loss due to these transactions. For, as we shall argue in Chapter VIII of this Part, the banks should sell government securities and raise interest rates, if the demand for labour increases too much; and the banks may therefore be obliged to sell at a low price, when the rate of interest is high, government securities which they had bought at a high price.

These difficulties are to some extent illusory. For, in the

first place, if the banks purchase a large volume of securities, the fall in their income due to low yields on securities will be counterbalanced by the fact that they are earning this yield on a larger number of securities; and their expenses will certainly not increase in proportion to the increase in their holding of securities. In the second place, when the banks start to purchase securities in order to lower interest rates, they may at first purchase securities at a relatively low price; it is only during the later stages of such a policy of monetary expansion that they will probably be obliged to purchase securities which already stand at a high price. And when the banks start to sell securities to prevent a boom, they may at first sell securities at a relatively high price and only in the later stages of a period of contraction will be obliged to sell securities at an abnormally low price. It is therefore by no means certain that they will, on the whole, be involved in serious capital losses due to these transactions.

If the banks are involved in serious difficulties of this kind, they should be encouraged by agreement among themselves to counterbalance these losses by reducing the rate of interest which they pay on their deposit liabilities, and even by levying bank charges on all money deposited with them. Such action may cause people to buy securities with their deposits instead of keeping money deposited with the banks, and this will help in raising the price of securities and lowering interest rates. This policy can only lead to any difficulty if it causes people to hold notes instead of deposits; and if this occurs to any considerable extent the banks must lower the charges levied on deposits. If the banks cannot meet their expenses by these means, it would be better for the government to subsidize their costs on approved principles rather than to abandon the desired financial policy. Such an eventuality is probably remote.

In short, the banking policy suggested in the previous chapter can be carried out provided that the following conditions are fulfilled. The Bank of England must be freed from any restrictions limiting its note issue which are incom-

patible with the required degree of monetary expansion; the joint-stock banks must be prevented from varying their cash reserve ratios very considerably; in the remote contingency that this policy makes it impossible for the banks to cover their costs the government should subsidize them during such a period.

On the other hand, the nationalization of the banks would not impede the prosecution of this policy, and could, indeed, only aid it. For if all the banks were nationalized and formed into one state monopoly, three of the difficulties discussed above would be capable of direct and immediate solution. In the first place, all the money in the hands of the public would now take the form either of deposits with the state bank or of notes issued by the state bank; and the state bank could be freed from all legal distinctions between its deposit liabilities and its note liabilities. If this were done, the cashing of deposits by the public would have no effect on the total amount of money. Secondly, it would no longer be possible for variations in the joint-stock banks' cash reserve ratio to affect the total amount of money. For a single state bank could through its own purchases and sales of securities control the total amount of money directly; it would no longer rely upon the indirect effects of its action upon other banks. Thirdly, a state bank could concentrate solely on exercising the desired control of interest rates through varying the total supply of money. It would attempt to cover its costs by lowering the rate of interest which it offered to pay on its deposit liabilities; but the effect of banking action on the total volume of industrial employment is so important that the making of a profit should be a secondary consideration. If the state bank in any period could not carry out the requisite monetary policy without making a loss, it would be necessary for the state to meet this loss from the Budget. As we have seen, any loss is improbable and would, in any case, not be very considerable; and such a loss is a small price to pay to cure unemployment.

We may conclude that the socialization of the banks would

in certain respects simplify the adoption of the proper monetary policy. But the proper monetary policy *can* be carried out with a minimum of change in the present legal position of the banks. Two morals are to be drawn from this conclusion. In the first place, the question of the nationalization of the banks must be decided largely on grounds other than those which are relevant here. In many respects the case for the nationalization of the banks is the same as the case for the nationalization of any other industry; this case is examined in Parts II and III. Secondly, it is not necessary to wait for any change in the legal position of the banks before banking policy is used vigorously for the prevention of unemployment. Indeed nothing is more important than the realization that for this purpose it does not matter who owns or controls the banks; all that matters is what policy they pursue.

V

THE PLANNING OF PUBLIC WORKS

IT may be thought from what has already been said that no action other than the monetary action already described will be necessary to preserve a high level of employment. This is probably not the case; for there are other important features of a slump, which we have not yet noticed. It is appropriate to outline the course of a slump in order to see why it is not always certain that the monetary authorities can prevent it merely by lowering interest rates.

Let us suppose that for some reason or another—e.g. because some particularly important work of capital development is completed—there is an initial fall in expenditure on capital goods. This decrease in expenditure on capital goods will mean that their price begins to fall. The fall in the incomes of those producing these capital goods will mean a decrease in expenditure on consumption goods, so that the price of consumption goods also falls. For the same reason industry as a whole will become less profitable, so that the price of ordinary shares will fall. But this downward movement in all money prices will itself cause a strong incentive to reduce money expenditure still further; for when prices are falling every one will wish to postpone expenditure and to hold money in anticipation that goods can be purchased more cheaply in the future. In particular, merchants will sell stocks of goods and will postpone their replacement, since they are falling in money value. Companies will postpone investment in machinery, both because industry is less profitable and because they expect to be able to purchase machines at a lower price in the future. Private individuals, since the price of ordinary shares is falling, will sell shares and hold money instead, and may postpone their purchases of durable consumption goods such as motor-cars in the hope that they will become still cheaper. All these factors will add still further to the fall in prices.

The depression might possibly have been prevented at the outset, if the banks had immediately lowered interest rates sufficiently. For such a lowering of the rate of interest at which persons can borrow would tend to induce them to start borrowing money for further capital developments. But there are three reasons why banking action designed to lower interest rates may not be sufficient alone. In the first place, the purchase of securities by the banks will only affect the rate of interest on industrial securities after a lapse of time (cf. Chapter III, pp. 26 and 27), so that some immediate diminution in expenditure on capital development will be hard to avoid. Secondly, even if interest rates all fall at once, it will take time for business-men to plan new development schemes, which have now become profitable. Thirdly, if for either of the previous reasons the banking policy does not have an *immediate* effect on expenditure on capital goods, prices will begin to fall; and as soon as prices begin to fall, the rate of interest itself will lose much of its power of control over the amount spent on new capital goods. People will postpone expenditure on capital development, even if the rate of interest is low; for they will expect to be able to instal the equipment at a lower cost in the future. When commodity prices are falling, merchants will be unwilling to hold large stocks of goods even if the rate of interest at which they can borrow money is very low; in the expectation of a fall in money prices they will postpone their orders for goods and reduce their stocks to a minimum.

But if at this point public authorities decide to borrow for public works and so spend more on capital goods, they will thereby stop the fall in the price of capital goods. Such action will maintain expenditure on consumption goods by those producing capital goods, and will therefore stop the fall in the price of consumption goods. Such extra expenditure on public works should be undertaken on a sufficient scale to prevent prices falling. It need only last sufficiently long to enable the banks by lowering interest rates to stimulate expenditure by ordinary private business again, and then the

expenditure on public works can be diminished, as that of private business increases. There should, therefore, be large schemes of capital development planned beforehand in such a way that they may be immediately speeded up as soon as a slump starts. As far as possible capital expenditure on prisons, hospitals, schools, asylums, waterworks, drainage, afforestation, telephones, housing, town and regional planning, docks, harbours, railways, roads, tramways, bus services, gas, electricity, and any other services under public control should be planned ahead by the public authorities. These plans should be so devised that the maximum amount of expenditure can be undertaken immediately or—perhaps at some inconvenience—put off to a later date.

This does not involve inventing jobs which would not otherwise be undertaken. The reduction of interest rates by monetary policy should be the main permanent instrument of control, and increased expenditure on public works above the normal should be regarded as only a temporary measure. It may be, for instance, that full employment is being maintained with a rate of interest of 5 per cent. and with an expenditure of £100 millions a year on public works. If, however, the normal amount which public authorities would spend on public works, if they were not concerned with the effect upon employment, is only £50 millions, then the rate of interest is too high. For the public authorities must in this case be speeding up their plans or simply creating relief works to maintain an expenditure of £100 millions, and they must continue to do so until the rate of interest is lowered. In this situation the banks should increase the amount of money and reduce the rate of interest, thereby stimulating the amount of capital development undertaken by private business and also raising the 'normal' figure of public works expenditure; for, as we saw in Chapter II of this Part (p. 14), normal expenditure on capital development by public authorities will be stimulated by a fall in interest rates. As capital development undertaken by private enterprise is stimulated, the expenditure on capital development by public

authorities may be reduced towards the normal level. There must, therefore, be careful co-ordination between monetary policy and public works policy. As soon as a depression starts, the public authorities should speed up their expenditure sufficiently to prevent it; and the monetary authorities should lower the rate of interest, and should continue to do so as long as expenditure by public authorities has to be maintained at a figure above the normal.

We must examine the effect of this policy on the budgetary position of public authorities. We have argued that the expenditure, which public authorities would normally undertake over a period of years, should be so distributed over those years that more than the normal amount is being undertaken at one time and less than the normal at another. There is bound to be some disadvantage and some cost to the community in spreading this expenditure unevenly; and we have suggested that public authorities should spend more in bad times, when it is difficult for them to raise money by taxation, and less in good times, when it is easy for them to obtain a budget surplus. We must now face this problem. Granted that public authorities should spend more in bad and less in good times, how are they to raise the necessary funds in bad times and what should be their budgetary policy in good times?

By spreading their expenditure over a period of years in the way suggested, there will be certain economies in the actual cost of the work undertaken, to be set against the disadvantages of not spreading their expenditure exactly as they would otherwise have done. When times are bad, prices are likely to be lower than when times are good; for the money demand for goods in general is lower in bad times than in good times. They will therefore be buying on a large scale when prices are low, and buying little when prices are high, so that the cost of the public works undertaken over a period of years will be less than it would have been, if the development were undertaken at a steady rate. It must be recognized, however, that the more successful their policy, the

less important will this economy be. If the policy is completely successful in preventing slumps and booms, there will be no considerable fluctuations in total expenditure, and so no fall in prices when the public authorities' expenditure is above the normal, and no rise in prices when the public authorities' expenditure is below the normal. There is another economy which they will gain in any case. If the monetary authorities are properly lowering interest rates in bad times and raising them in good times, the public authorities will be in a position to borrow money on better terms in bad times than in good times. From the financial point of view they should borrow for their works in bad times, when they can do so cheaply, and should use any surplus funds which they may have in good times to pay back what they have borrowed; for in good times, when the rate of interest is high, the price of fixed interest securities will be low and the public authorities will be able to buy back their own securities at the lowest possible price.

This policy has other advantages, and to develop the argument we must discuss budgetary problems in somewhat more detail. The receipts of any public authority can be divided into three heads:

(a) its receipts from taxation;
(b) its trading profit on any concerns which it owns—e.g. the profit from Municipal Trams or the profit on the Post Office—and
(c) the amount which it borrows, which we will call its Budget Deficit.

A public authority's expenditure can also be divided into three heads:

(a) its current expenditure on the maintenance of existing services;
(b) its expenditure on capital construction; and
(c) the repayment of any sums which it has borrowed in the past, which we will call its Budget Surplus.

A public authority's current expenditure includes expenditure on interest on any sums borrowed in the past, on defence, on education, on police, on unemployment benefit, &c., in so far as this expenditure does not involve capital development. Its capital expenditure includes all expenditure on capital development, such as the construction of new roads.

A public authority's tax receipts and trading profit will automatically fall in bad times. The receipts of the government, for example, from income tax and surtax do not depend solely upon the rate of tax levied on each pound of income, but also upon the amount of income that there is to be taxed, so that in a period of bad trade when money incomes have fallen to a low figure, the receipts from these taxes will be low. At the same time the government's current expenditure will automatically rise in bad times. For example, expenditure on relief directly or indirectly caused by unemployment is an important item in the budgets of the government and of local authorities, and this sum will rise in bad times. This may be offset to some extent by the fact that in bad times prices are likely to be lower than in good times, so that economies may be achieved in some items of current expenditure by purchasing at lower prices. Experience shows that in bad times most public authorities find it at the same time more difficult to raise revenue by taxation or by trading, and also more difficult to resist claims for increased current expenditure.

In spite of this we have suggested that capital expenditure should be at its highest in bad times, so that the authority's budget surplus will fall to a low figure or be turned into a deficit. This is, in fact, a sound policy even from the purely budgetary point of view. A temporary increase in capital expenditure by public authorities may be necessary to prevent a depression; and, we have argued, the prevention of a depression will itself prevent a fall in public authorities' ordinary revenue and a rise in their current expenditure. If an increase in capital expenditure causes revenue to be greater and current expenditure to be less than it otherwise would

have been, the real cost to the budget of the increased capital expenditure is the sum necessary for this expenditure minus the rise in revenue and the fall in current expenditure, due to the increased trade activity caused by the capital expenditure. From the strictly budgetary point of view the government, when it is contemplating the expenditure of an additional £10 millions on houses, should subtract from this cost the decrease in its expenditure on unemployment relief and the increase in its receipts from income-tax, due to the fact that this extra expenditure will increase employment and taxable income. In this respect the government's budget differs from that of an individual. If Mr. Smith spends more on developing his business, he may indirectly increase the amount spent on his own product, and so the size of his own income, by increasing the purchasing power of those who are employed on the development work. But since Mr. Smith's product is only one among a very large number on which the increased purchasing power may be spent, he will quite rightly neglect this as of no importance in his calculations. But the government knows that for every extra pound of income its tax receipts will rise and that for every extra man employed its expenditure will fall, and it should therefore take account of the increased tax receipts and reduced expenditure on unemployment relief, which will be caused by its capital expenditure. The cost to the budget of increased public works expenditure is less than the actual sum which must be spent directly on these works.

Granted that expenditure on public works should be increased in bad times, why should the necessary funds not be raised by taxation, e.g. by raising the income-tax from 4*s*. to 5*s*. in the pound, instead of by borrowing? The answer is that if these extra funds are raised by additional taxation, the taxpayers may meet this burden by reducing their expenditure on consumption goods. In as far as this happens, nothing will be achieved by the public works policy; for the increased expenditure by public authorities will be offset by the diminished expenditure of private individuals on

consumption goods, and the total demand for commodities will remain unchanged. It is also possible that the higher rates of taxation will diminish the net return which can be expected on business extensions and so discourage private individuals from borrowing money for expenditure on capital development.[1] If the public authorities raise the necessary funds by borrowing, these disadvantageous effects can be avoided, provided that the banks prevent any rise in interest rates. For, provided that interest rates do not rise, private individuals will have no incentive to contract their expenditure on capital development; and since they are not being taxed, they will not restrict their expenditure on consumption goods.

Public authorities should therefore plan their budgets so that in years of full employment their receipts from taxation and from trading profits are sufficient to cover both their current expenditure and their 'normal' expenditure on capital development and to leave that budget surplus, which on other grounds it is considered proper to devote to debt redemption. While a public authority can properly plan to reduce its debt at a certain rate over a period of good and bad years, it should allocate a large sum to debt redemption in good years and should be willing, if necessary, to face a budget deficit in bad years.

At present the government budgets for the same Sinking Fund (i.e. for the same budget surplus for debt redemption), in good years and bad years alike—though the force of circumstances has made it impossible for this to be maintained during the last depression. We have shown that the government should budget for a large surplus in good times and for a small surplus or for a deficit in bad times. If the surplus of good times is sufficiently great, the debt will be reduced just as quickly in this way; and at the same time the government will be pursuing a policy which is more easily main-

[1] The effect of a high rate of income-tax in diminishing the incenti to spend money on capital development is discussed in Part III, Chapter IV (pp. 238 and 239).

tained (since a surplus is more easily achieved in good times), and which will be most effective in preserving a high level of employment. If the banks lower interest rates in bad times, the government will be borrowing new money or buying up its own securities on a small scale when interest rates are low and the price of its securities are therefore high; and it will be buying up its own securities on a large scale, when interest rates are relatively high and the price of its securities are therefore low. A given sum spent on debt redemption over a period of years on this principle will therefore reduce more debt than if it were spread evenly over good and bad years. It should be possible to devise a scheme by means of which this principle would operate automatically. For example, the high sum of £100 millions a year might be set aside in the budget to be used either for debt redemption or for public works. The whole of this sum would be spent on debt redemption when unemployment fell below a certain standard figure; but as unemployment rose above this figure part of this £100 millions would be used for public works. The proportion of the £100 millions to be used for public works would rise on a fixed scale with every rise in the percentage of workers, who were unemployed.

We have now shown the necessity for the planning of a certain amount of capital development in such a way that it can be postponed or speeded up as circumstances require. The state must provide some incentive for the planning and execution of development on these principles. For these purposes a National Investment Board should be set up with the following duties and powers:

(a) The National Investment Board should require that all bodies—such as local authorities, public utility concerns, and socialized industries—over which the state exercises control, should plan their capital development for some years (e.g. three to five years) ahead. The plans for the more distant years cannot be as detailed or as definite as those for the immediate future, and they would continually be subjected to detailed and even fundamental alteration. The

government should itself plan ahead its own expenditure on capital development, and should inform the National Investment Board of these plans.

(b) The National Investment Board should invite any private industries of importance to co-operate in the scheme by planning their development ahead for a period of years and by supplying to the Board information about the size and nature of these plans.

(c) Each body or industry co-operating in the scheme should be requested to plan its development on the assumption that there will be full employment in the future and the full normal purchasing power associated with full employment. For if the government is successful through its banking and public works policy in preventing depressions, this assumption will be justified. This does not mean that each body should assume that there will be no fluctuation in the demand for its services or its product; each body must judge in what way changes in taste, in population, or in the cost of alternative services, will affect the relative demand for its own product. But they should plan for that development which would be justified in the absence of a general depression of trade activity. At first it may be difficult to get bodies to accept this principle. But it is desirable that it should be adopted as far as possible, since it will help greatly to stabilize at the proper figure the amount which people plan to spend on capital development. The more vigorously and successfully the state prosecutes the different policies suggested in this Part to preserve a high level of employment, the more readily will different bodies plan their future expenditure on this assumption.

(d) Assuming that full consumers' purchasing power is maintained, the amount of capital development that any concern will undertake depends upon the rate of interest at which money can be borrowed. We have seen in Chapter II of this Part that this is true not only of industries producing goods for sale, but also of public authorities providing communal services. Each body in preparing its plans should

indicate to the National Investment Board at what rates of interest the different parts of its plan would be worth undertaking, so that the Board can know how much development would be undertaken at 5 per cent. interest rates, how much more if the rate were only $4\frac{1}{2}$ per cent., how much more if the rate fell to 4 per cent., &c. For it can then inform the banking authorities how much the rate of interest must be lowered to stimulate expenditure on capital development by a certain amount. In Chapter VIII of Part II (p. 194) we shall discuss the principles upon which public bodies in charge of socialized concerns should assess the rates of interest at which different blocks of capital development are justified; and we shall conclude that the socialization of monopolistic concerns will help to reduce unemployment, because from the community's point of view a larger expenditure on capital development by such concerns is justified at the current rate of interest than would be undertaken if they were left in private control.

(e) The amount of capital development undertaken in any one year can be varied in another way. For example, with the rate of interest at 4 per cent. or lower it might be worth while spending £300 millions on the electrification of the railways. It would still remain to decide whether £100 millions should be spent each year for three years or £60 millions each year for five years. Each body should be required to draw up its plans in such a way that the expenditure worth undertaking at any given rate of interest is as far as possible capable of being concentrated on a few years or spread over a number of years. The National Investment Board should be informed of the extent to which such variations can be made, and will then be in a position to vary the amount of money spent on capital development by recommending the postponement or speeding up of such expenditure.

(f) Finally some inducement must be offered to those bodies, which are not in the direct control of the state, to plan and execute their capital development on these principles. As the state already subsidizes the cost of certain services

provided by local authorities, such subsidies might well be made conditional upon the planning of development on these principles. The principle of such subsidization might be extended. For example, the government might empower the National Investment Board to remit in whole or in part the income-tax payable by companies on that part of their profits which they put to reserve funds, if these companies will plan their development on these principles. Or the government, through the National Investment Board, might on certain conditions give a state guarantee of the interest on loans contracted by bodies, which were willing to plan their development on these lines, and thus enable them to borrow at the lowest possible rates of interest. All industries which are directly controlled by the state can be required to co-operate in this scheme; and an important argument in favour of the socialization of industries is that it would help to cure unemployment by giving the state this extra power of control over expenditure on capital development. Other arguments for and against the socialization of industries are examined in Parts II and III; this chapter presents an argument in favour of the socialization of those industries, whose expenditure on capital development is large, if the state cannot obtain sufficient control over the volume of expenditure on capital development by other means.

VI

DIRECT CONTROL OF EXPENDITURE ON CONSUMPTION

WE have already argued in Chapter V, p. 38 above, that banking action alone will probably not be sufficient to prevent unemployment; and it was for this reason that we advocated in the last chapter the planning of expenditure on capital development by public authorities in such a way that this block of expenditure could be speeded up as soon as a slump started. But there is reason to believe that even the combination of appropriate banking policy and planned public works expenditure may not be sufficient to cure the problem entirely. In the first place, the state may not be able to control a sufficiently large volume of expenditure on capital development, unless it socializes a large number of industries. Secondly, even if the state has full control over a large volume of capital development, it will not be possible to plan that development in such a way that *all* of it can be postponed or speeded up at will. For example, drains must be put in when new houses are built, and new houses must be built in a locality when new houses are needed there; it may not, therefore, be possible to postpone or speed up expenditure on drainage systems at will to any great extent. Thirdly, some time may elapse between the decision to speed up or postpone public works expenditure and the consequent change in expenditure itself. Contracts for a particular scheme of work may have been made ahead, and in any case some time must elapse before the technicians concerned can alter their arrangements for carrying out the work. These arguments can be exaggerated. The state through different public authorities could already control a large volume of expenditure on capital development, and, if a determined effort were made, a large part of that development could undoubtedly be planned in the desired way.

But it is still possible that unemployment cannot be completely solved on these lines. This chapter is therefore devoted to the discussion of a third and less orthodox method of controlling the total volume of expenditure. The two methods which we have already discussed—namely, banking expansion and the expansion of expenditure on public works—can only fail because of a time-lag in their application or in the effect of their application. If there is such a time-lag, prices and profits will start to fall; and, as we have seen, once prices and profits have started to fall, it may be very difficult to prevent the further development of a slump. But there is one form of expenditure which should be capable of almost instantaneous expansion, and that is the purchase of consumption goods by individuals.

If, as soon as a slump started, people were given a certain amount of money to spend in any way they liked, the increase in expenditure would probably be immediately effective. We shall discuss later in this chapter how schemes of this kind might be organized. For the moment we can imagine a simple method, in order to examine the main effects of such a scheme. Suppose then that as soon as a slump starts the state prints new notes which it hands over to people to spend as they like, and that as soon as total money expenditure on commodities rises excessively[1] the state levies extra taxes, which it uses to redeem and destroy the notes which it has issued. The effect of such action would be to prevent any falling off in the demand for consumption goods during a slump, even if the total amount spent on capital goods fell off. For this new expenditure by consumers would offset the fact that the producers of additional capital goods were receiving smaller incomes from the sale of their products. But if expenditure on consumption goods does not fall off, then their prices will not fall and the profitability of their production is maintained; for these reasons the slump will not be intensified by falling prices and by the diminishing

[1] In Chapter VIII of this Part we shall explain what is meant by an excessive rise in total money expenditure.

profitability of industries producing consumption goods, which would normally remove all incentives for capital development in a time of slump. Conversely, if total money expenditure rose excessively, consumers' incomes would be taxed and the money proceeds of the tax cancelled, so that an excessive rise in expenditure on consumption goods would be avoided, even if the total amount spent on additional capital goods, and so the earnings of the producers of these goods, could not be prevented from rising. But since the demand for consumption goods would not rise, their prices and the profits to be made in their production would not rise. Thus a cumulative rise in total money expenditure would be avoided.

If this policy is adopted, the other policies which have been suggested in this Part will be made more effective. Both banking policy, by which the rate of interest is controlled, and the policy of planned public works expenditure aim directly at increasing the total amount spent on capital goods. If the total amount spent on consumption goods is directly stimulated, this will increase the profitability of the industries producing consumption goods, and will make capital development in these industries more profitable. For this reason the direct control of expenditure on consumption goods will make the control of expenditure on capital development by banking and public works policies more effective.

Let us outline two schemes by which a policy of granting direct credits to consumers might be carried out. In the first scheme it is suggested that the consumers' credits should be given to the unemployed to spend. For this purpose all the able-bodied unemployed would be brought under a single Unemployment Assistance Board, and no distinction would be drawn between those unemployed who are still in insurance and those who are no longer qualified for insurance benefits. For the purpose of controlling expenditure on consumption goods by this scheme, the benefits paid by the Board to the unemployed should be on as generous a scale as possible.[1]

[1] The danger involved in paying benefits on too generous a scale is discussed in Chapter VIII of this Part (p. 78).

In Chapter VIII of this Part (pp. 75–7) it will be argued that it is inadvisable to reduce unemployment by monetary measures alone below a certain volume, which will be called the 'standard' volume of unemployment. To finance the unemployment assistance suggested above, this 'standard' volume of unemployment should be assessed on the principles outlined in Chapter VIII of this Part. Contributions should be levied from all employed workers and from all employers according to the number of workers they employ, as in the existing Unemployment Insurance Scheme; but these contributions should be levied at such rates that they would raise just sufficient funds for the Unemployment Assistance Board to cover the expenditure on unemployment assistance, if there were only the 'standard' volume of unemployment. The state should make no contribution from the budget to the funds of the Unemployment Assistance Board. When the volume of unemployment rises above the 'standard' and the ordinary receipts of the Board are no longer sufficient to cover its payments of benefit, the difference would be financed by new notes issued by the Bank of England and covered by a non-interest bearing debt of the Unemployment Assistance Board to the Bank of England. When, on the other hand, unemployment falls below the 'standard' volume, the normal receipts of the Unemployment Assistance Board will be in excess of its payments of unemployment benefit, and the excess of its receipts would then be used to pay off with notes its debt to the Bank of England; these notes would then be cancelled. If at any time the total indebtedness of the Board to the Bank of England had been repaid, any further excess of receipts over expenditure could be used by the Board to accumulate a reserve holding of notes. These notes would be withdrawn from circulation and would be available, as soon as unemployment rose above the 'standard' volume, to finance the difference between the receipts and the expenditure of the Board without increasing the note issue of the Bank. If this proposal were adopted, it would be necessary to amend the existing law relating to the note issue of the

Bank of England. But we have already suggested that all legal restrictions of the note issue should be abolished; and no further monetary legislation would be required.

By giving the unemployed generous unemployment benefit and financing this benefit in such a manner that it does not reduce the purchasing power of other individuals, expenditure on consumption goods will not fall during a slump as much as it would otherwise have done. If the funds for unemployment benefit are raised by taxation, the expenditure of taxpayers on consumption goods is likely to be reduced to some extent. If the funds for this purpose are borrowed in the ordinary manner by the sale of new securities at the current rate of interest, interest rates may be kept at a higher level than is desirable, unless the securities are bought by the banks with new money created for that purpose; and in any case the Unemployment Assistance Board will pile up a debt on which interest has to be paid in the future, although the debt is not backed by any asset which yields a return. The proposed scheme not only avoids these difficulties, but also provides automatically an increasing cash reserve for the joint-stock banks as long as there is excessive unemployment, so that they will be able to extend their loans, advances, and investments and so lower interest rates without any fall in their cash reserve ratio. The new notes paid to the unemployed will, as they are spent, be paid into the banks by the firms receiving them, and this will raise the cash reserves of the joint-stock banks. The scheme will have similar advantages if the total volume of money expenditure rises excessively so that unemployment falls below the 'standard' volume. As more labour is employed, expenditure on consumption will not be excessively increased, since the expenditure of wages will only take the place of the expenditure of the unemployment benefit; and this reduction of expenditure by the unemployed will not be offset by lower taxation and so by increased expenditure by the taxpayers. Moreover, so long as the receipts of the Unemployment Assistance Board are in excess of its expenditure, the difference

will cause a drain of notes from circulation and from the cash reserves of the joint-stock banks, and this will force the joint-stock banks rapidly to restrict the amount of money and to raise interest rates.

It may be thought that the above proposals will lead to inflation. The kind of inflation that occurred in Germany after the War, caused by an attempt on the part of the government to finance its ordinary expenditure by printing new notes, is to be avoided at all costs; but the proposals outlined above cannot lead to similar results. So long as there is a large amount of unemployed labour and of idle capital, the total amount of money spent on goods should be increased; for, while increased expenditure on goods will cause some rise in prices, yet, so long as considerable unemployment exists, a small rise in price will make it profitable to produce on a much larger scale. On the other hand, an increase in the total amount of money spent on goods is to be avoided when there is no serious unemployment of labour and capital; for in these circumstances the increased money expenditure can only cause prices to rise.

In this respect the foregoing proposals must be sharply distinguished from an attempt to finance an ordinary budget deficit by inflationary measures. For if a government finances a permanent budget deficit by printing more paper money, this must lead to progressive and inflationary rises in prices, as soon as all factors of production are employed. But these other proposals cannot lead to a progressive inflation of prices. As soon as there is only a 'standard' volume of unemployment, the issue of new notes will automatically cease, since the receipts of the Unemployment Assistance Board will balance its expenditure; and, indeed, if there were any further increase in the money demand for commodities leading to a further fall in unemployment, the proposed measures would cause a strong deflationary movement to develop. These proposals are, therefore, designed to maintain and increase money purchasing power, as long as serious unemployment exists and as long as such action

can cause output and employment to increase; and they will cause equally strong deflationary measures as soon as the money demand for commodities becomes excessively great.

The scheme has been outlined here in its final form. If it is started when the volume of unemployment is not greatly in excess of the 'standard' volume, there is no reason why it should be modified; unemployment benefit can be determined on the most generous lines and the contributions from workers and employers can be calculated to make the receipts and expenditure of the Unemployment Assistance Board balance with a 'standard' volume of unemployment. If, however, there is a much greater volume of unemployment at the time when this scheme is started, the final scheme should be approached by stages; for, as we shall argue in Chapter VIII of this Part (pp. 79–82), there are dangers in reducing unemployment too quickly. If, for example, the 'standard' volume of unemployment was assessed at 5 per cent. of the employable population, and the scheme were started when there was 20 per cent. unemployment, the contributions and benefits might be balanced first of all for a 15 per cent. volume of unemployment. When this point was reached, the scales of benefit might be raised or contributions might be lowered, so that the contributions and benefits balanced for a 10 per cent. volume of unemployment; and when unemployment had been reduced to this figure the scheme might be altered to its final form.

This method of financing consumers' credits has two advantages. In the first place, it gives money income in a time of slump to those who need it most, and in the second place, it provides an automatic guide to determine when consumers' credits should be paid. We shall argue in Chapter VIII of this Part that the whole object of monetary policy should be to reduce unemployment to and maintain it at a certain 'standard' volume; and this scheme automatically distributes consumers' credits to the unemployed when unemployment is above the 'standard', and automatically

draws in notes from those employed in industry and cancels them when unemployment falls below this 'standard'.

On the other hand, this scheme has one disadvantage. It is true that with this scheme a *labourer's* income and expenditure would not be much reduced if he lost his job, since his unemployment benefit would take the place of his wage. But the scheme does not prevent all reductions in expenditure on consumption goods, because the income and expenditure of *owners of property* may still fall in times of slump. Suppose that for some reason the total amount spent on additional capital goods falls off. The growth of unemployment in the industries producing capital goods will no longer cause any considerable fall in the workers' expenditure on consumption goods. But the fall in expenditure on capital goods will also reduce the profits made in those industries, so that profit makers will spend less on consumption goods. This will cause a fall in the incomes of those producing consumption goods, so that the profits earned in industries producing consumption goods will also be reduced; and in consequence these profit makers will in turn restrict their expenditure on consumption goods.

Thus the scheme which we have just outlined would not remove all fluctuations in expenditure on consumption goods; and it is therefore worth while outlining a method by which the state could supplement this scheme. When unemployment rose above the 'standard' volume, the government might reduce the rates of taxation and so increase the spendable incomes of the taxpayers. The difference between the government's receipts and expenditure could then be financed by the sale to the Bank of England of non-interest bearing securities either for newly created deposits or for newly issued notes. This would increase consumers' expenditure by the reduction of taxation without reducing the government's expenditure. The new money created by the Bank of England would be paid by the government for its normal expenditure to persons who would probably deposit it in the joint-stock banks, and this would swell the cash

reserves of these banks and so help with the execution of the proper banking policy. And conversely when the volume of unemployment fell below the 'standard', the government could levy specially high rates of taxation, the proceeds of which could be used either to repay any non-interest bearing debt sold in previous periods to the Bank of England, or, if such debt were already all redeemed, to build up a balance of idle money either on deposit with the Bank of England or in the form of notes. By such means consumers' credits of any desired magnitude could be administered.

A budgetary policy of this kind suffers from two disadvantages. First there is no foolproof mechanism to determine when taxation should be diminished to allow for a budget deficit or when taxation should be increased to provide a budget surplus. With the financing of consumers' credits through the payment of unemployment benefit, the creation or destruction of consumers' income is automatically brought about, as unemployment rises above or falls below the 'standard'. Consumers' credits should be financed through the ordinary budget only if the government is likely to have the power, intelligence, and courage to raise and to lower rates of taxation at the appropriate time. Secondly, even if the government had all the necessary knowledge and power to carry out the policy, there would with present budgetary arrangements be a considerable time-lag between the decision to increase or diminish consumers' income and the full effect of this decision. If there is an annual budget so that rates of taxation are adjusted only once a year, and if certain taxes are paid only once or twice a year, the actual rise or fall in consumers' income effected by the budgetary policy will be determined a year in advance. If unemployment rose unexpectedly, consumers' credits could not be arranged till the next budget; and if unemployment fell, consumers' income could not be restricted by this means till the end of the financial year. The great advantage of the finance of consumers' credits through unemployment assistance is that the benefits are paid each week and the contributions levied each

week on the workers employed during that week, so that each week the volume of consumers' credits is automatically adjusted to the existing volume of employment.

The only way to overcome the disadvantages of financing consumers' credits through a budget deficit is to discover some taxes, e.g. taxes levied on the sale of commodities, which can be collected at frequent intervals. The rates of these taxes might then be fixed on a sliding scale varying with the percentage of unemployment. For example, in any month in which there was 20 to 15 per cent. unemployment the rate of tax on a particular commodity might be 5 per cent. of the value of that commodity, while in any month in which there was 15 to 10 per cent. unemployment the rate of tax might be 10 per cent. of the value of the commodity, and so on with higher rates of tax for lower volumes of unemployment. Suppose that according to this scale a rate of tax of 20 per cent. would be levied in any month, when the volume of unemployment was at its 'standard' level. In this case an amount of money equal to the yield of a tax of 20 per cent. on the value of the commodity would be paid into the Treasury each month for ordinary budgetary expenditure. In any month in which the actual rate of tax levied was less than 20 per cent., the difference could be made up by the sale of non-interest bearing debt to the Bank of England for newly created deposits or notes; whereas in any month in which the actual rate of tax levied was above 20 per cent., the excess of tax revenue could be used to redeem any non-interest bearing debt previously sold to the Bank of England or to accumulate an idle balance of deposits or notes.

A separate Commission might be set up to administer a scheme of this kind. It would remain the duty of the Chancellor of the Exchequer to impose standard rates of taxation in order to present a 'balanced budget' apart from borrowing to finance public works on the principles examined in the last chapter. The proceeds of any taxes which could be collected from month to month would be paid direct to the separate Commission, which in turn would pay to the

Treasury each month a sum equal to the amount which these taxes would have yielded if they had been levied at the standard rate. The Commission would, however, levy these taxes at a rate which varied with the volume of unemployment; as the percentage of workers unemployed rose, so the rate of tax actually levied would fall. In order always to pay into the Treasury a sum equal to the standard rate of tax, the Commission would supplement the sums actually raised in taxation with new deposits or notes created by the Bank of England against non-interest bearing debt of the Commission, or would use any surplus to reduce its debt to the Bank of England or to pile up a balance of idle deposits or notes. If all the rates of taxes on commodities and all the rates of weekly contributions by employers and workers for national insurance schemes were varied on this principle, there would be a powerful weapon to prevent fluctuations in expenditure on consumption goods. Such a scheme would be free from all disadvantages; it would still be necessary for Parliament to impose standard rates of tax that would balance the budget, and the actual rates of tax levied would be quickly adjusted to changes in the unemployment situation.

At the end of Chapter I of this Part we concluded that the total amount of money spent on consumption goods could be increased in either of two ways—by an increase in the total amount spent on additional capital goods unaccompanied by any rise in the proportion of income saved, or by a fall in the proportion of income saved unaccompanied by a fall in the total amount spent on additional capital goods. It is possible for the state to induce people to spend a larger proportion of their income. For example, by heavy death duties or by heavy taxes on the accumulation of capital above a certain figure the state could make it unprofitable to save so large a part of income. Moreover, the rich save not only a larger amount, but also a larger proportion of their income than the poor. For this reason any increase in the equality of distribution of income will cause a fall in the proportion of income saved, by transferring income from those who save

a large proportion to those who save a small proportion of it. In Chapter IV of Part III we shall discuss the effect of different forms of taxation upon the distribution of income and so upon the proportion of income which is saved. Here it is only necessary to point out that by redistributing income through taxation the state can incidentally control the total volume of expenditure on consumption goods. If a situation arises in which there is permanent unemployment, which cannot be cured by lowering interest rates through banking policy because no practicable fall in interest rates will stimulate sufficient expenditure on capital goods, then the only permanent cure of unemployment is to reduce the proportion of income which is saved. In these circumstances, therefore, a more equal distribution of income may be necessary, in order to stimulate expenditure on consumption goods sufficiently to cure unemployment. Whether this situation has ever arisen can only be discovered by adopting the banking and public works policies which we have examined in this Part, and so seeing whether or not they are sufficient to cure the problem. Methods of obtaining a more equal distribution of income in order to stimulate expenditure on consumption goods are discussed at length in Part III, where we shall examine this and other reasons for redistributing income.

VII

WAGES AND UNEMPLOYMENT

AT the end of Chapter I of this Part it was suggested that unemployment might be cured by one of three methods:

(a) by stimulating the total expenditure of the community on capital development;
(b) by increasing expenditure on consumption goods without any diminution in expenditure on capital development; or
(c) by reducing money cost of production without allowing any diminution in total money expenditure on capital goods or consumption goods.

We have now discussed the two first methods; and in this chapter we shall discuss the possibility of curing unemployment by reducing money costs of production. Our discussion will be confined to reductions in money wage-costs because, as we shall show, it is the real wage-rate which is of importance in determining the volume of employment.

At first sight it seems possible to argue that a reduction in wage-rates will reduce unemployment because it will make labour cheaper to the employer, who will therefore employ more persons. But one might also argue that a reduction in wage-rates will *increase* unemployment, because it will reduce the purchasing power of labour and thereby reduce the demand for goods and so the demand for labour. It is clear that one at least of these arguments must be wrong, and to judge between them we must distinguish between the many meanings of the phrase 'a reduction in wages'. For this purpose a clear distinction must be drawn between—

1. the money wage-rate,
2. the money wage-bill,
3. the real wage-rate, and
4. the real wage-bill.

1. By the money wage-rate is meant the amount of money paid to a man for working a particular period of time (e.g. a week). Thus the money wage-rate may be £2 for a man's work for a week.

2. The money wage-bill means the total amount paid in wages in a period of time (e.g. a week). This quantity depends upon the money wage-rate and the number of people employed. If 10 million people are employed for a week at a weekly wage-rate of £2, the money wage-bill for the week is £20 millions.

3. The real wage-rate means the amount of commodities that can be bought with the money wage-rate, or in other words, the amount of goods which a man earns for a week's work. It depends, therefore, upon the money wage-rate and the price of commodities. It will be doubled by a doubling of the money wage-rate or by a fall of prices to half their previous level.

4. The real wage-bill means the amount of goods that can be bought with the money wage-bill and is equivalent to the total amount of goods which wage-earners can buy. The real wage-bill will be increased either by a rise in the money wage-bill or by a fall in the prices at which commodities can be bought.

A 'reduction in wages' usually means a reduction in the money wage-rate, e.g. a reduction from £2 to £1 10*s*. in the wage paid for one man for a week's work; but it does not *necessarily* follow from this that the money wage-bill, the real wage-rate, or the real wage-bill will fall. Suppose that there were a reduction in the money wage-rate from £2 to £1 10*s*., and that in consequence of this 15 million instead of 10 million people were employed; then the money wage-bill would rise from £2 × 10 millions or £20 millions to £1½ × 15 millions or £22½ millions. We cannot simply argue that a reduction in the money wage-rate will cause a fall in the money income, which wage-earners have to spend; for if it did cause a sufficient increase in employment, the money wage-bill would, in fact, increase. But suppose that the reduc-

tion in the money wage-rate caused an increase in employment but so small an increase, that the money wage-bill fell; for example, suppose that in consequence of a fall in the money wage-rate from £2 to £1 10*s*., employment increased from 10 millions to 12 millions, so that the money wage-bill fell from £2 × 10 million or £20 millions to £1½ × 12 million or £18 millions. It does not follow that the amount of goods which wage-earners can buy—i.e. the real wage-bill—has fallen. For a reduction in the money wage-bill from £20 millions to £18 millions represents a 10 per cent. fall in the money wage-bill; but if the prices of commodities had fallen by more than 10 per cent., the reduced money wage-bill could buy more commodities, so that the real wage-bill or the real demand of wage-earners for commodities would have risen. And there is nothing improbable in this; for a reduction from £2 to £1 10*s*. in the money wage-rate represents a fall of 25 per cent. and this might be expected to cause some fall in costs and prices. It does not even follow that a reduction in the money wage-rate will cause a fall in the real wage-rate; if prices fell by more than 25 per cent. when the money wage-rate was lowered from £2 to £1 10*s*.—though this may be improbable—the real wage-rate would have risen.

We have not yet proved what will, in fact, be the result of a reduction in the money wage-rate; we have only shown that a reduction in the money wage-rate does not necessarily involve a reduction in the money wage-bill, the real wage-bill, or even in the real wage-rate. We must go deeper into the connexion between wages and employment; and to avoid confusion we shall not normally speak of 'wages' or 'wage-rates' but of the money wage-rate, the money wage-bill, the real wage-rate or the real wage-bill.

The number of men which any producer will employ depends upon the real wage-rate which he must pay, or in other words upon the connexion between the money wage-rate which he must pay and the price which he can get for his product. At any given time a producer will have a certain fixed amount of plant and machinery; but with this

plant and machinery he can produce more or less by employing more or less labour. Suppose that our producer is producing boots, that he must offer a money wage-rate of £2 a week, and that he can sell his boots at 10*s*. a pair. How should he decide whether it is worth his while employing more labour? If he employs another man, his money wage-bill will go up by £2 a week. If by employing another man he can add 5 pairs of boots to his output, he would increase his receipts by 5 × 10*s*. or £2 10*s*., since he can sell boots at 10*s*. a pair. In this case he would find it profitable to employ another man.[1] If the producer can sell boots at 10*s*. a pair and hire labour at £2 a man a week, he is, in fact, paying a real wage-rate of 4 pairs of boots a week. It will pay him to employ an extra man only if the employment of an additional man adds more than 4 pairs of boots to his output since he will in that case add something to his own income. We have come to the important conclusion, that the volume of employment which a producer will give depends upon the real wage-rate and the extent to which his output would be increased if he employed one man more.

This is a principle of such great importance that it is worth while studying its implications more fully. A producer with a given plant and equipment can produce more by employing more men with it. But after a certain point if he wishes to produce more, he must employ more men on the same machine or on parts of his machinery which are not so efficient as the parts which he is already using; when this point is reached, the producer may still be able to produce more by employing more men, but will add less to his output each time he employs an additional man. This is illustrated in Table III.

[1] The student of economics will notice that I am assuming 'perfect competition'. This assumption is made for simplicity's sake and my conclusions are not greatly affected by it. For, given the productivity function of labour and the degree of imperfection both in the labour market and the market for the product, the volume of employment will be determined by the real wage-rate, and this is the point which I am making. Imperfect competition is discussed below in Part II.

TABLE III

The Average and the Marginal Product of Labour

A *Men employed*	B *Total product*	C *Average product of labour*	D *Marginal product of labour*	E *Real wage-bill*
10	200	20	..	..
11	218	19·8	18	198
12	235	19·6	17	204
13	251	19·3	16	208
14	266	19	15	210
15	280	18·7	14	210
16	293	18·3	13	208
17	305	17·9	12	204
18	316	17·5	11	198
19	326	17·2	10	190
20	335	16·8	9	180

The figures in column A represent the number of men employed. The figures in column B represent the number of pairs of boots produced a week by the firm in question. Thus we suppose that when 14 men are employed, the output is 266 pairs. Column C shows the output per man. This figure we call the *Average* Product of Labour. Column D shows the addition to the output which is caused by employing one more man; this is called the *Marginal* Product of Labour. Thus we see from columns A and B that if 13 men are employed instead of 12, the output will be increased from 235 to 251, an addition to the output of 16 pairs a week. In other words, the marginal product of the 13th man is 16 pairs of boots a week, so that the figure 16 is placed in column D opposite to the figure 13 in column A.

The figures in column D are important from the point of view of the employer who has to decide whether he should employ more or less men. For an employer will find it worth his while to employ more men, if the real wage-rate is lower than the marginal product of labour and to employ less men if the real wage-rate is above the marginal product of labour. For the real wage-rate represents the amount of goods which

the employer must pay to hire one more man—although the payment is made indirectly in the form of a money wage-rate having this real value; and the marginal product of labour represents the amount by which his output would increase if he employed one more man. It will pay an employer to employ another man, only if the resulting addition to his output—i.e. the marginal product of labour—is greater than the real wage-rate paid to the extra man employed. If the price of boots is 4*s*. a pair and the money wage-rate is £3, the real wage-rate is 15 pairs of boots a week. We can see from column D of Table III that in these circumstances the producer will not employ less than 13 men—or he could add more to his output than to his real wage-bill by employing one more man; nor will he employ more than 14 men—or it would be possible for him to reduce his output by less than his real wage-bill by employing one less man.

It is the marginal product of column D and not the average product of column C, which is important from the point of view of deciding whether to give greater or less employment. It is true that a rise in the *average* product or output per head in relation to the real wage-rate will increase the total real profit which employers can make on each man employed. And this greater profitability of industry may affect the willingness of the employers to expand their output in the future by installing new capital equipment. But it has no effect upon the employer's immediate decision to employ more or less men with his present capital equipment. What is relevant in this connexion is not the absolute size of the profit being made, but the possibility that this profit could be increased by an increase or by a diminution in the number of men employed. And, as we have just seen, it is the relation between the real wage-rate and the *marginal* product of labour which determines this.

Column D of Table III shows that the real wage-rate must fall in order that more men shall be employed, because an increase in the volume of employment causes the marginal

product of labour to fall; but it does not follow that the real wage-bill will necessarily fall as well. The figures in column E represent the figures in column A multiplied by the figures in column D. We can see from Table III that if the real wage-rate is 18, 11 men will be employed, since we have just shown that labour will be employed up to the point at which the marginal product of labour is equal to the real wage-rate. The real wage-bill is the total amount of goods paid in wages, and in this case will be 11×18. This figure, 11×18 or 198, is shown therefore in column E opposite to the figure 11 in column A. Each figure in column E shows the real wage-bill that will be paid to the number of men shown in column A at a real wage-rate equal to the marginal product of labour shown in column D. At first in our illustration as the real wage-rate is lowered (e.g. from 18 to 17) the total amount of goods paid in wages rises (e.g. from 198 to 204 pairs of boots a week). In this case the reduction in the real wage-rate will be more than counterbalanced by the increase in the volume of employment that would result from it. But after a certain point in our illustration a reduction in the real wage-rate will more than offset the increase in employment caused by it, and the real wage-bill will fall. Thus if the real wage-rate is reduced from 13 to 12, employment will increase from 16 to 17; but this would cause a fall in the real wage-bill from 208 to 204.

It is probable that in a depression a reduction in the real wage-rate would cause a rise in the real wage-bill. We know from statistical information that during the depression between 1929 and 1932 money wage-rates fell much less severely than commodity prices. This meant that the real wage-rate had risen; and as we should expect, there followed a reduction in employment. At the bottom of the depression the real wage-rate was higher than before, so that the man who could still find a full week's employment got more for it in real goods than before the depression. But the reduction in employment had been so considerable, that the real wage-bill, i.e. the total amount of goods that wage-earners could

buy, had fallen heavily. It is reasonable to argue from this that the opposite process may be expected in a recovery; as prices rise more quickly than money wage-rates, the real wage-rate will fall and employment will rise. But just as a rise in real wage-rates was accompanied by such a fall in employment during the slump that the total real wage-bill was reduced, so we may expect a fall in the real wage-rate during recovery to be accompanied by such an increase in employment that the total real wage-bill will be increased.

If employers always adjust their present demand for labour in such a way that the real wage-rate is neither below nor above the marginal product of labour, it follows that, if employment of labour is left in the hands of private enterprise,[1] there are only two ways in which the number of persons employed can directly be made to increase. Either the marginal product of labour must rise or the real wage-rate of labour must fall. It is impossible to increase the marginal product of labour at will; for the marginal product of labour depends upon the efficiency of the management of the firm, the amount and form of the equipment with which labour has to work, and the technical knowledge and skill both of the workers themselves and of those who are managing the firm. These things may change relatively slowly, but obviously they cannot be made to change immediately and rapidly, simply to absorb the unemployed. The marginal product of labour will be increased by any addition to the capital equipment installed, since this will increase the importance of having more labour to operate it. The marginal product of labour will rise as labourers themselves increase their skill and ability through obtaining better education, training, or upbringing. Most technical inventions will raise the marginal product of labour, though it is possible that some inventions

[1] Even if industry is socialized, reasons are given in Part II, Chapter VIII, and Part IV, Chapter II, for believing that the state should continue to pay labour a real wage-rate equal to its marginal product. In Part III, Chapter V, suggestions are made to enable a socialist state to meet the problem of an equitable distribution of income, even if this principle of wage payment were adopted.

enable capital equipment to be used in such a way that, although there is a rise in the total output produced by a given number of men with a given amount of capital, yet the importance of having one more man at work is actually reduced. Over any period of time, in which capital development and technical inventions are taking place, the marginal product of labour will almost certainly be rising. And this means that over a period of years more labour could be employed without a fall in the real wage-rate, or that a rise in the real wage-rate could take place without a fall in the volume of employment.

But at any one moment of time the marginal product of labour is given and cannot be immediately altered. In order, therefore, to increase immediately the volume of employment by an appreciable amount, the real wage-rate must be reduced. But the real wage-rate may be reduced either by a rise in the price of commodities or else by a fall in the money wage-rate unaccompanied by a corresponding fall in prices.

What has been said in this chapter may seem unconnected with, if not contradictory to the arguments of Chapters I to VI. But this is not the case. In Chapters II to VI we were discussing methods whereby the total amount of money spent on commodities might be increased—i.e. by a lowering of the rate of interest or by increased public works expenditure or by consumers' credits. This increased expenditure of money on commodities will raise the price of commodities, and this—provided that the money wage-rate is not raised—will lower the real wage-rate, which will cause employment to increase. Thus the methods discussed in Chapters II to VI all turn out to be methods of lowering the real wage-rate; what we have now to discuss is whether a reduction in the money wage-rate will have the same effect. Whether a reduction in the money wage-rate will cause an increase in employment depends upon whether it will cause the real wage-rate to fall. This is the precise question to which we must now turn our attention.

Let us suppose that all money wage-rates are reduced by 10 per cent. If in consequence of this all prices fell by 10 per cent., there would be no change in the real wage-rate; since employers would be paying a man 10 per cent less money but would at the same time be receiving 10 per cent. less for their product, the number of men employed would remain the same. But if, when the money wage-rate fell by 10 per cent., the prices of commodities fell by less than 10 per cent., then the real wage-rate would fall, and employers would employ more men. We can best see what would happen if all money wage-rates were reduced by 10 per cent. by supposing that, in consequence of this, commodity prices also fell by 10 per cent., and then asking whether the result is, in fact, a possible one or not. If both money wage-rates and money prices fell by 10 per cent., there would be no change in the real wage-rate and therefore no change in employment and no change in the output of commodities. The money wage-bill would also fall by 10 per cent., since the same number are employed at a money wage-rate reduced by 10 per cent; but the real wage-bill will be unchanged, since the the same number are being employed at the same real wage-rate. The money incomes of the classes other than wage-earners would have fallen by 10 per cent.; for since the same output of commodities is being sold at 10 per cent. lower prices, 10 per cent. less money is being spent on commodities as a whole. But since the money wage-bill has been reduced by 10 per cent., 10 per cent. less money is left over to go as income to the other classes of income receivers. Nevertheless, the real income of these classes would be unchanged, because the price of commodities has fallen by 10 per cent. at the same time that their money incomes have fallen by 10 per cent. We reach the important conclusion that if a 10 per cent. reduction in money wage-rates caused a 10 per cent. reduction in prices, there would be no change in output or any one's real income, but that all money incomes as well as all money prices would be 10 per cent. lower.

But if money incomes, money expenditures, and all money

prices fell by 10 per cent., people would need to hold 10 per cent. less cash in their pockets and 10 per cent. less money on deposit with the banks. Similarly, each business firm would need to hold 10 per cent. less money against its ordinary transactions. If then a reduction of 10 per cent. in the wage-rate did cause a 10 per cent. reduction in all prices, this would cause a 10 per cent. superfluity of cash and deposits held for the purpose of carrying on ordinary day to day transactions.

What would people do in these circumstances? First of all they might deposit some of the now superfluous cash with their banks. But this would only increase their deposits with the banks still further, and, as we have seen in Chapter III of this Part, would cause the banks to increase their deposit liabilities by lending more or by purchasing securities. In as far as people were holding more deposits than they needed for ordinary business purposes, they would probably invest some of their deposits in securities. This purchase of securities by the banks and by members of the public would drive up the price of securities and so lower the rate of interest, until other people were willing to sell these securities and to hold idle deposits instead of them. In other words, the 10 per cent. superfluity of cash and deposits would cause the rate of interest to fall, and this, as we have seen in Chapter II, would cause an increased money expenditure on commodities. Prices would therefore rise again, if they had at first fallen by 10 per cent. in consequence of the 10 per cent. reduction in money wage-rates. This secondary rise in prices would cause some increase in employment, because prices would have fallen less than money wage-rates.

A 10 per cent. fall in all money wage-rates will therefore have the same effect on employment as an increase in the amount of money. But there are reasons for preferring the methods outlined in Chapters III to VI for curing unemployment to the method of reducing money wage-rates. First, we have seen that a reduction in money wages will cause an increase in employment only because it will make some cash and deposits superfluous and so cause a fall in the rate

of interest. This indirect effect on the rate of interest may take some time to make itself felt. It will not operate until people realize they are holding superfluous balances of money. It is therefore better to operate on the rate of interest directly, by the monetary means discussed in Chapter III. Secondly, there are serious practical difficulties in reducing money wage-rates. Money wage-rates are fixed for fairly long periods of time by Trade Union agreements or by the regulations of state bodies such as Trade Boards or Agricultural Wage Boards. It is practically impossible to reduce money wage-rates by a given percentage in all industries at once. To do this as an indirect means of reducing the rate of interest, when the rate of interest can be reduced directly by monetary action, is absurd. Thirdly, there are many other payments which are fixed in terms of money for long periods. These fixed money charges will become more onerous, if money prices fall. Thus the payment of interest on the national debt and the payment of interest by industrial companies on debentures is fixed in terms of money. If prices fall by only 5 per cent. when the money wage-rate is reduced by 10 per cent. this will certainly cause a reduction in the real wage-rate and so an increase in employment. But higher rates of taxation will have to be levied on the reduced money incomes in order to meet the interest on the national debt. Interest payments on debentures will also become more burdensome. Normally a fall in money prices and in all other money costs would merely cause a transference of real income from the owners of ordinary shares, who are entitled to the remainder of an industry's profits, to the owners of debts fixed in terms of money; for if the total money profits of an industry fall by 10 per cent., and if some persons must be paid fixed sums of money out of the reduced profits of the industry, the money income of the owners of ordinary shares will fall by more than 10 per cent. But if the total amount of debt fixed in money terms is large, a reduction in all money prices and other money costs by 10 per cent. might make it impossible for the industry to meet its debts. In this case

some firms may be driven into bankruptcy. If extra employment is given by raising the price level without any change in the money wage-rate, by the means discussed in Chapters III to VI, this will also reduce the real burden of debt in terms of commodities. Nor is this necessarily unfair to the owners of debentures and government securities; for a time of depression and of heavy unemployment is always one in which prices have fallen because of the falling off in monetary demand. To raise prices again is not to rob those who receive fixed money incomes; it merely prevents them from enjoying the unexpected increase in the real purchasing power of their incomes, which has been caused by the fall in prices. Fourthly, although the effect of a reduction in money wage-rates will in the end cause prices to fall less than money wage-rates so that there is some increase in employment, yet there will be some fall in prices; for otherwise money balances would not become superfluous and there would be no fall in interest rates to stimulate employment. While this fall in prices is taking place, every one will have an incentive to hoard money and to sell goods, which are falling in money value. For this reason money balances may not at first be considered superfluous, and interest rates will not fall until after the fall in prices has continued for some time. For this reason reductions in money wage-rates are slower than direct banking action in their effect upon the rate of interest and so upon the volume of employment. For the reasons discussed above it is better not to rely on reducing money wage-rates but on the methods suggested in Chapters III to VI to give employment. But we may conclude from this discussion that Trade Unions and Trade Boards in regulating money wage-rates should not attempt to increase employment by increasing money wage-rates in the belief that this increases purchasing power. This view is fallacious. If industry is left to individual enterprise, an immediate increase in employment must be accompanied by a reduction in the real wage-rate; and for this reason money wage-rates must not be raised in an attempt to offset every rise in commodity

prices. In Part III we shall examine methods by which inequities in the distribution of income can be rectified without raising real wage-rates above the level required to maintain full employment; and in the next chapter we shall discuss the proper policy to be adopted by those who are responsible for the fixation of money wage-rates.

VIII

THE PROPER CRITERION OF POLICY

WE have shown certain ways in which the total money demand for commodities may be increased in order to absorb unemployed labour. We are now in a position to explain what are the safe limits to which a policy of expansion can be carried.

The representatives of labour—whether they be the individual labourers themselves, trade union officials, or members of wage boards—can only demand a higher or consent to a lower *money* wage-rate, though they intend thereby to raise or lower the *real* wage-rate. The workers in any trade are likely to demand a higher money wage-rate if the real wage-rate in that trade is low or if the amount of unemployment in that trade is small. For the lower the real wage-rate, the greater will be their insistence that wage-rates shall be raised; and the smaller the volume of unemployment, the smaller will be the pressure of unemployed workers seeking jobs in the trade, and so the greater will be the ability of those already employed in the trade to insist successfully upon a higher wage-rate.

Suppose that by means of the measures already discussed total money expenditure on goods, and so the price of goods, were greatly and rapidly raised, so that in consequence there were such a fall in the real wage-rate that all the unemployed were drawn into employment. Since the reduction in real wage-rates and in unemployment would be very great, workers would probably insist on higher money wage-rates in an attempt to raise their real wage-rates again. If the workers succeeded in raising *real* wage-rates—i.e. if the monetary policy adopted did not allow a further rise in commodity prices—unemployment would grow again. If, on the other hand, a further expansion of the money demand for commodities were allowed so that commodity prices rose as rapidly as money wage-rates, unemployment would not rise

again. But in this case workers would not have succeeded in raising real wage-rates. Still higher money wage-rates would be demanded, and a still further rise in commodity prices would be necessary to avoid unemployment. To reduce unemployment to a very low level by the expansion of the money demand for commodities might therefore involve an inflation of money incomes and prices, proceeding with ever-increasing rapidity, since all the time workers would be raising money wage-rates in a vain effort to raise real wage-rates.

An expansion of money incomes and prices cannot be dangerous, until it reduces the real wage-rate and the volume of unemployment to the point at which the general level of money wage-rates begins to rise. But even if the policy of monetary expansion is carried somewhat beyond this point, there is no danger. We have already seen that as capital development takes place, the marginal product of labour will rise gradually. If the volume of unemployment is reduced by monetary expansion to the point at which money wage-rates begin to rise (but no more quickly than the gradual rise in the marginal product of labour due to capital development), there will be no need for a continuous rise in commodity prices to maintain the existing volume of employment. For if the marginal product of labour is rising by 2 per cent. per annum, the real wage-rate paid to labour will be rising by 2 per cent. per annum without any diminution in the volume of employment; and money wage-rates may therefore rise by 2 per cent. per annum without any rise in the money price of commodities becoming necessary to prevent the growth of unemployment.

An estimate should therefore be made of the rate at which the marginal product of labour is likely to rise because of capital development. This can serve as a practical criterion of policy. The total money demand for commodities should be raised so long as money wage-rates are rising less quickly, and a policy of contraction must be adopted as soon as money wage-rates are rising at an appreciably greater rate. In

Chapter VI proposals were made for the financing of unemployment benefit by new money when unemployment was above the 'standard' volume. This volume we have now defined precisely. Unemployment is of the 'standard' size when it has been just sufficiently reduced for money wage-rates to start rising at the same rate as the marginal product of labour.

There are certain ways in which this 'standard' volume of unemployment may itself be reduced, though it is not possible for it to disappear completely. In any modern state in which industrial progress and change is taking place there is bound to be some unemployment. The consumers' demand for different commodities will change from time to time, and inventions will take place, which will cause some industries to expand and others to contract. For reasons of geographic location, specialized training, and lack of knowledge of opportunities, labour will take time to shift from contracting to expanding industries, and, at any one time, some labour must be unemployed. A very great rise in total money demand and consequently in all money prices would be necessary to provide full employment in the specially depressed and contracting trades; and for this reason the general level of money wage-rates would start to rise very rapidly, if an attempt were made by monetary expansion to reduce unemployment literally to zero.

But, in the first place, it is possible to improve the organization of the labour market so that any labourer moving from a low paid to a higher paid occupation can find an appropriate job, learn a new trade, and move to a new district more quickly. Some reference is made to measures of this kind in Part II, Chapter VII (p. 173). If this is done, a smaller volume of unemployment would be necessary to exert a given downward pressure on money wage-rates in the trades and occupations into which labour is moving, and the 'standard' volume of unemployment would be reduced. Secondly, those responsible for fixing money wage-rates must realize that an immediate and considerable diminution in unemployment

must be accompanied by a fall in the real wage-rate. If money wage-rates are pushed up in spite of considerable unemployment, then the 'standard' volume of unemployment will be high. The 'standard' volume of unemployment will be considerably reduced, if those who are responsible for fixing money wage-rates refrain from demanding a rise in wage-rates as long as there is any considerable unemployment.

It is for this reason that the payment of unemployment benefit on too generous a scale may cause unemployment. It is sometimes held that it causes unemployment, because it makes the unemployed unwilling to work; but even if this were so, there is an easy remedy. If the benefit cannot be claimed by any one who refuses a suitable job, and if the Employment Exchanges are made to work efficiently as Employment Exchanges, so that they can always tell the worker when there is a suitable vacancy, there is no danger that a worker will live in idleness when he might be working. But it may raise the 'standard' volume of unemployment by making those who are responsible for the fixing of money wage-rates more insistent upon raising money wage-rates, even though there is considerable unemployment; for the higher the scale of unemployment benefit, the less will those in work be concerned with the volume of unemployment when they consider their demands for higher money wages.

In Chapter VI of this Part it was suggested that a generous scale for unemployment benefit should be adopted in order to prevent the demand for consumption goods from falling off, when unemployment rose; and the higher the rates of unemployment benefit, the more effective this scheme would be. The doctrine of 'Work or Maintenance'—i.e. the principle that a man who is unemployed through no fault of his own should be maintained at a standard as high as he would obtain in work—is both equitable and also desirable for the purpose of maintaining the demand for consumption goods. Nothing stands in the way of the principle except, that it might increase the tendency for money wage-rates to be pushed up in spite of heavy unemployment. It is therefore

of the utmost importance that those responsible for fixing money wage-rates should not insist upon raising them so long as there is any substantial volume of unemployment, but should rely on the measures suggested in Part III to obtain a more equitable distribution of income.

We have shown on what principles a 'standard' volume of unemployment may be estimated, and have argued that when unemployment differs from this a policy of monetary expansion or contraction should be adopted to bring the volume of unemployment back to this 'standard' level; but we have not yet shown how quickly unemployment should be brought back to this level. If the 'standard' volume of unemployment is 500,000 and the actual volume of unemployment is 1,000,000, a policy of expansion should be adopted. But should the authorities attempt to reduce this 1,000,000 to 500,000 in the course of a year or in the course of five years? Just as there are dangers in expanding beyond a certain point, so there are dangers in expanding too quickly up to that point. If an attempt is made by monetary expansion to reduce unemployment rapidly, there will be a rapid rise in prices which must cease as soon as unemployment has been sufficiently reduced. But it is extremely difficult to stop a rapid rise of prices without a subsequent fall in prices and a regrowth of unemployment. As long as the monetary expansion continues, the price of consumption goods and of capital goods will be rising; and as industry is becoming more profitable, the price of ordinary shares will rise. This upward movement of prices itself provides a strong incentive for increases in expenditure. When prices are rising no one will desire to hold money, but rather to hold goods or securities, since, if bought and held for a time, they can be sold for a money profit. Every business concern will have a strong incentive to speed up expenditure on capital goods, which will be more expensive in the future; merchants will increase their stocks; business concerns will increase their holdings of raw materials; and private individuals will desire to hold ordinary shares rather than money, and may even speed up

their expenditure on such durable consumption goods as motor-cars in anticipation that they will be more expensive in the future.

If the rise in prices is rapid, a great deal of expenditure will be undertaken solely because prices are rising; and if the rise in prices stops suddenly, all this expenditure will also stop suddenly. This cessation of expenditure is likely to cause the total value of monetary expenditure not only to stop rising but actually to fall. But if the total expenditure falls, prices will begin to fall and unemployment will grow. As soon as prices begin to fall, people will have every incentive to postpone expenditure and a general slump will be hard to prevent. This difficulty can be avoided if prices are allowed to rise only slowly, and if this rise in prices becomes gradually less and less rapid, until the point is reached at which unemployment has been reduced to the 'standard' volume. For in this case there will be no very great volume of expenditure being undertaken solely because prices are rising, and, in so far as such an incentive for expenditure does operate, it will be gradually and not suddenly removed.

But there is a second reason why such a policy of moderately slow expansion at an ever-diminishing rate is necessary, if a subsequent slump is to be avoided. There are, broadly speaking, two reasons why new capital goods are purchased. In the first place, producers may instal machinery of the same character as the machinery which they already possess, because they are employing more labour and wish to equip the new labour with the same capital equipment as the labour already employed. Secondly, producers may instal machinery of a new type, because they find it profitable to employ a larger proportion of capital to labour. If the demand for consumption goods is increasing and there is unemployed labour to be absorbed, machinery of the old type will be demanded to equip the newly employed labour, even if there is no fall in the rate of interest at which money can be borrowed for capital development. For the rising demand for consumption goods itself will make it profitable to expand

productive capacity. If, however, the demand for consumption goods is not expanding rapidly there will be a demand for more capital goods only if it becomes profitable to substitute capital for labour, i.e. to produce by new methods of production with a larger proportion of capital equipment to labour. Such an incentive can be provided only by a fall in the rate of interest, which reduces the cost of using capital relatively to the cost of employing labour.

If, therefore, the demand for consumption goods is allowed to increase rapidly in order to reduce unemployment rapidly, there will at first be a large demand for capital equipment of the old type to equip the newly employed labour. But as soon as the demand for consumption goods is no longer allowed to rise rapidly, the demand for capital goods of the old type will disappear. For this reason as soon as the rapid increase in money expenditure were stopped, the greater part of the existing expenditure on capital development might cease; and this in turn would cause a fall in employment in the industries producing capital goods, in the price of capital goods, and in the incomes of those producing them. This in turn would cause a fall in expenditure on consumption goods, and so a fall in employment and prices in these industries as well. The cessation of a rapid expansion would itself have led to a contraction in money expenditure and a general slump.

As soon as the demand for consumption goods is no longer allowed to expand rapidly, the demand for new capital goods can be maintained only if the monetary authorities bring about so rapid and considerable a fall in the rate of interest that a demand for machinery of new types is developed, equal in magnitude to the existing demand for machinery, which depended upon the continuation of the rapid expansion in the demand for consumption goods. But for reasons that we have already discussed such a possibility is remote. The banks cannot immediately reduce interest rates, if people do not expect interest rates to fall; and in any case the banks can only indirectly affect the rate of interest on industrial securities, since the banks will, in the main, purchase government

securities and will directly reduce the yield only on this type of security. But even if interest rates do fall promptly, producers cannot suddenly realize what new types of machinery have become profitable or make their plans for such alterations in their methods of production. If there is any delay in turning from a demand for machinery of the old type to a demand for new types of machinery, there will be a fall in total expenditure on capital goods and a slump will not have been prevented.

This difficulty can be avoided if unemployment is absorbed at a relatively slow and ever-diminishing rate, as the 'standard' volume of unemployment is approached. If the demand for consumption goods and so the demand for labour is never allowed to expand at a rapid rate, there will never be a very large demand for capital of the old type to equip the newly absorbed labour; and from the very start a considerable proportion of the total demand for capital goods will have to be induced by a falling rate of interest giving an incentive to increase the proportion of capital to labour. If, moreover, there is a gradual reduction in the rate at which the demand for consumption goods is allowed to expand, the demand for old types of machinery will gradually fall off, and the fall in the rate of interest need be only gradually accelerated. There will be no point at which a *sudden* fall in interest rates is necessary in order to stimulate a *sudden* increase in the demand for new types of machinery.

These considerations lead to a simple criterion for the proper rate of monetary expansion. Suppose that there are 1,000,000 unemployed in excess of the 'standard' volume. If in every year 10 per cent. of the existing volume of unemployment is drawn into industry, the actual numbers drawn into industry each year will gradually diminish. In the first year 100,000 will be absorbed, in the second year 90,000, and so on, so that year by year the number absorbed will gradually diminish. We may conclude that the 'standard' volume of unemployment should be estimated, and that according as actual unemployment is greater or less than this, a policy of

monetary expansion or contraction should be adopted. Any expansion should, however, be controlled in such a way—through the control of interest rates, of public works expenditure, and of consumers' credits—that in each year a certain percentage (e.g. 10 per cent.) of any excess of unemployment above the 'standard' is absorbed into industry. By this means it can be judged not only whether a policy of expansion or of contraction should be adopted but also whether the rate of expansion or of contraction should be altered.

IX

OTHER METHODS OF REDUCING UNEMPLOYMENT

IN Chapter VII of this Part (pp. 68 and 69) it was stated categorically that in a competitive economic system employment could not be immediately increased without an accompanying reduction in the real wage-rate; and it was implied that any reduction in unemployment must be accompanied by a reduction in the real wage-rate. Neither that statement nor that implication were altogether correct. It is the purpose of this chapter to discuss measures by which the state may cause an immediate reduction in unemployment unaccompanied by a reduction in the real wage-rate. These measures can be divided into three groups:

(a) the restriction of hours of work in order to share a given amount of work among a larger number of persons,
(b) the removal of men from the labour market, and
(c) the removal of taxes on employment or the subsidization of employment.

The first two of these methods attempt to reduce unemployment without increasing employment, i.e. to reduce the number of hours a day or the number of years in his life for which a man seeks employment, so that even if no greater total amount of work is done there will at any time be less people seeking work.

Since our present object is to show how unemployment may be reduced without any fall in the real wage-rate, it is convenient to assume that a positive monetary policy is adopted by means of which the price level of commodities is kept constant. This involves the assumption that, by means of banking control over interest rates and of public control over public works expenditure and consumers' credits, the total volume of money expenditure is so adjusted that no

rise or fall is allowed in the general level of commodity prices. If this is done, real wage-rates will vary directly with money wage-rates; and we can therefore state our present problem by asking whether unemployment can be reduced without a fall in the *money* wage-rate. But throughout this chapter it must be carefully remembered that the measures discussed may of themselves cause some change in the total money demand for goods and so in the general level of commodity prices; we are, in fact, assuming that a deliberate and successful monetary policy is being pursued, which offsets any such effect of the measures discussed. We are making this assumption solely to simplify our investigation; it is not suggested that the stabilization of commodity prices is the correct criterion of monetary policy.

In discussing the restriction of hours of work as a means of curing unemployment we must first differentiate between the hourly and the weekly wage-rate. If a man is paid £2 for a week's work of 40 hours, he is being paid a money wage-rate of 1*s*. an hour. If the hours of work are reduced to 30 a week, his weekly money wage-rate will fall to £1 10*s*. provided the hourly money wage-rate is kept constant, or the hourly money wage-rate will rise to 1*s*. 4*d*. if the weekly money wage-rate remains £2. If, as we are assuming, the price level of consumption goods is kept constant, in the first case the hourly real wage-rate and in the second the weekly real wage-rate will remain unchanged.

Secondly, it must be decided how the hours worked in a week are to be cut down. Should the length of the working day be reduced? Or should the working day be as long but the number of days worked by each man be reduced? Or should a larger number of shorter shifts be worked each day, so that the working day of the factory remains the same though the working day of each man is reduced? These different methods will affect producers' costs differently. Those who are interested in this problem are referred to a report by the International Labour Office on *Hours of Work and Unemployment* published in 1933. To simplify the issues we shall

suppose that the hours worked each day are unchanged, but that the average weekly hours are reduced by giving each man a complete day off every now and then. Thus suppose that the weekly hours are reduced from 48 a week to 40. If a 48-hour week were made up of 6 working days of 8 hours, and this was then reduced to a 40-hour week, the working day might still be 8 hours and the factory might still be open for 6 days in the week, but every individual man would only work 5 days out of 6. By arranging that out of every 6 men employed each man takes a day off each sixth working day, the weekly hours worked may be lowered from 48 to 40, and by means similar to these the average working hours may be reduced in any degree desired.

If all the men employed are of equal efficiency, a reduction of hours of work of this kind should make no difference to the number of men that will be at work in the factory at any time, so long as the *hourly* real wage-rate is the same. If the hourly real wage-rate, the number of hours worked a day, and the number of days in the week on which the factory is open, all remain the same, there is no reason why any change should take place in the number of men the producer employs at any one time. He still employs a certain number of men for 8 hours a day for 6 days in the week, but these men are not always the same men. If the hourly real wage-rate is unchanged, the relation between the money demand price for his commodity and his money costs will not have changed. The only change will be that instead of 5 men being fully employed and 1 unemployed, there will be 6 men employed for 5 out of 6 days. The weekly real earnings of each of these men will, however, be only five-sixths of their previous earnings.

This is a sure method of sharing the same amount of employment among more people. But if the *weekly* instead of the hourly real earnings of labour remain unchanged, the employer will have to pay the same weekly real wage as before to 6 men, although only 5 of them will be working at any one time. To him this is equivalent to a simple rise in

the real wage-rate, and will cause a reduction in the number of men put to work in the factory on each day. But this does not necessarily mean that there will be an increase in unemployment.

A numerical example will make the difference clear. Suppose that 500 people are employed in a factory for 6 days a week, and that then the working week for each man is reduced to 5 days a week with such a rise in the hourly real wage-rate that the weekly real wage-rate remains constant. Since the hourly real wage-rate is raised, there will be some diminution in the total number of people at work in the factory on each day in the week. Let us suppose that for this reason the number at work on each day falls from 500 to 450. In this case 540 men must be attached to the factory: on each of the 6 days in the week one-sixth of the 540 men or 90 men will be resting and the remaining 450 will be at work. In this case although the number of men employed on each day has fallen from 500 to 450, yet the volume of unemployment will be reduced by 40, since the number of men attached to the factory will have risen from 500 to 540. But if the rise in the hourly real wage-rate, which was necessary to maintain the weekly real wage, had caused the employer to reduce the number at work in the factory on each day from 500 to 400, then the total number attached to the factory would fall from 500 to 480; and the volume of unemployment would rise by 20.

Thus a restriction in hours of work combined with a rise in hourly real wage-rates will reduce the total amount of work done; but it will decrease unemployment, if the rise in hourly real wage-rates does not restrict the total volume of work done beyond a certain point.[1] We may conclude then

[1] It will be clear to the student of economics that the result will depend upon whether the elasticity of demand for labour in terms of the hourly real wage-rate is $>$ or <1. If the elasticity of demand is <1, a rise in the hourly wage-rate will cause the wage-bill to increase. If the wage-bill is increased and the weekly wage-rate is unaffected, more people must be brought into employment. If the elasticity of demand is >1, the wage-bill will fall when the hourly wage-rate rises, and therefore with a constant weekly wage-rate unemployment will be increased.

that it is always possible to reduce unemployment by a restriction of the hours of work without any fall in the *hourly* real wage-rate, and that it may be possible to reduce unemployment in this way without any reduction in the *weekly* real wage-rate, if the necessary rise in the hourly real wage-rate does not much diminish the total number of men at work at any one time.

The second type of state action which will reduce unemployment without a fall in the real wage-rate is the removal of people from the labour market. The raising of the school-leaving age or the payment of pensions to persons at the age of 60 if they will retire from employment, will reduce unemployment without a fall in the real wage-rate by reducing the number of the young and of the old, who are seeking employment. For the volume of employment given depends upon the real wage-rate and the marginal product of labour. Without any alteration in either of these quantities and therefore without any alteration in the volume of employment given, these schemes would reduce the number of people seeking work in the labour market and would so reduce the volume of unemployment.

This conclusion is, broadly speaking, true, though there are possible ways in which it may have to be modified. The financing of the education of the juveniles or of the pensions payable to people over 60 might have some repercussions on the volume of employment given at the existing real wage-rate. Taxes would have to be raised to finance the extra education or pensions. If these funds were raised, for example, by a tax levied on each worker employed, the net real wage-rate received by the worker would be reduced below the marginal product of labour by the amount of the tax. With such a tax, therefore, the real wage-rate would have to be reduced to maintain the existing volume of employment. But if the necessary funds were raised by appropriate forms of taxation—we shall discuss the different effects of different taxes at length in Chapter IV of Part III—there is no reason why the financing of these schemes, even if there

is no fall in the real wage-rate should prevent them from reducing unemployment by the number of persons withdrawn from the labour market.

But there is a second way in which this conclusion may have to be modified. These schemes will remove a certain type of labour from the labour market; the raising of the school-leaving age, for example, will remove all juveniles of a certain age from employment. The real wage-rate and the marginal product of juveniles is different from the real wage-rate and the marginal product of older persons; and if an employer is employing juveniles for a certain job, he is doing so because it is cheaper for him to do so. If all juveniles are removed from the labour market and if the real wage-rate of the older persons does not fall, it may not pay the employers to substitute unemployed older workers for the cheaper juveniles who are called to school. In as far as this happens, it will be employment and not unemployment that is reduced by the removal of juveniles from the labour market. It is conceivable that unemployment will actually be increased for this reason. For in certain occupations older men may be employed side by side with juveniles, who are alone capable of undertaking a certain vital part of the job. If the juveniles are now removed from employment, it will not only be impossible to substitute older unemployed workers for them, but it will be necessary to throw out of work the older workers, who were employed side by side with the juveniles.

But, in fact, the removal of juveniles from the labour market will almost certainly reduce the amount of unemployment at any given real wage-rate. For, in the first place, it will remove a number of juveniles, who are themselves unemployed. And secondly, it is, in the vast majority of cases, possible to substitute older men for juveniles. It may not pay employers at the current real wage-rate to fill with older men all posts vacated by juveniles who are kept at school, but it will probably pay them to fill some of these posts; and only in rare circumstances will it be necessary to throw older men out of work, because they can no longer get juveniles to work with

them. The removal of juveniles from the labour market will increase unemployment, only if the number of older men, who are thrown out of work because they can no longer get juveniles to work with them, is greater than the number of juveniles previously unemployed plus the number of posts vacated by juveniles and refilled by older men.

The third way in which unemployment can be diminished without any reduction in the real wage-rate is through the removal of taxes directly levied on employment or through the subsidization of employment. By these means the real wage-cost which the employer has to pay for each man employed may be decreased without affecting the real wage-rate received by the worker. Suppose that under an unemployment insurance scheme the employer and the worker have to contribute 1*s*. each a week. If the money wage-rate is £2 a week the worker receives only £1 19*s*., since 1*s*. a week is deducted from his wage as a contribution towards the unemployment insurance fund; while the employer has to pay £2 1*s*. for every additional worker, since he must contribute 1*s*. for each worker employed. This is not only true of contributions levied for an unemployment insurance fund, but also of the other contributory insurance schemes for Health and Pensions, so that at present the amount levied in respect of each man employed is considerable. Suppose that the 2*s*. levied on each man employed for the payment of unemployment benefit were raised by a different form of tax, which does not vary directly with the number of men employed, e.g. by a tax on industrial profits. Then the amount which an employer has to pay for each additional worker would be reduced by 2*s*. a week without any reduction in the amount actually received by each worker, so that it would pay to employ more men at the same real wage-rate.

But this principle might be extended. Suppose that the wage-rate is £2 and that the state pays a subsidy of 10*s*. a week to employers for every worker employed and raises the funds for this subsidy by a tax on profits. In fact the state is giving to employers in the form of the subsidy exactly the

same amount which it takes from them in the form of the tax on profits; but nevertheless it will cause an increase in employment at a given real wage-rate. For each individual employer knows that for every additional labourer employed he will add only £1 10*s*. to his costs. Since the amount which he must pay in taxation on his profits does not depend upon the number of men he employs, each employer will take on another man until the addition to his receipts from the sale of the extra product has fallen from £2 to £1 10*s*. Thus the workers will get a wage-rate of £2, but will be employed up to the point at which the value of their marginal product is only £1 10*s*. It is sometimes suggested that for every extra man employed employers should receive as a subsidy from the unemployment insurance fund the whole or part of the amount, which would have been paid to the man, if he were unemployed. And the argument of this paragraph shows that such action would cause an increase in the volume of employment at any given real wage-rate received by the worker.

There are, however, certain administrative difficulties in the operation of this scheme. In the first place, if it were simply stated that for every man employed through the Employment Exchanges after a certain date, a subsidy of 10*s*. a week would be paid, employers would immediately dismiss men in order to employ them again in the near future to qualify for the subsidy. This difficulty could be surmounted in the following way. If the scheme were started in January 1937, an arbitrary date in the past—say January 1936—would be chosen. Each employer would be told that for every man employed above the number he was employing in January 1936 he would receive the subsidy from the unemployment insurance fund. If this were done, no one would have an incentive to dismiss men in order to qualify for the subsidy on a larger number of workers.

There is a second difficulty of the same nature. In order that the funds paid in subsidy of wages should be most profitably used, they should be paid only on the wages of

those workers, who would not have been employed had the subsidy not been paid. In the course of time some industries will expand and others will contract, because of inventions which substitute petrol for coal or motor-cars for carriages, or because of changes in taste and fashion, which diminish the output of crinolines and increase that of hikers' shorts. Further, even if there is little change of this kind within any single industry some firms will decline owing to change of management leading to decay, while others will expand; some firms will disappear entirely, and others will take their place. For this reason as time goes on there will be less and less employment in the actual firms in existence in January 1936—or whatever date is chosen as the fixed reference date —and more and more employment will be given in new firms or in old firms which have expanded since the fixed reference date, so that a number of employers will qualify for the subsidy on a large amount of labour, which they would in any case have employed. After a considerable period of time the vast majority of employment might qualify for the subsidy, which could no longer, therefore, be met out of the ordinary unemployment insurance fund.

The only way to overcome this difficulty would be to revise the fixed reference date from time to time. But the more frequently the reference date is revised, the less effective will the subsidy become. If, for example, an employer was employing 100 men in January 1936, he might employ 110 men in January 1937, because he is promised a subsidy of 10*s*. a week on each man employed in addition to the number employed in January 1936. It is possible that in January 1938 little change has taken place in his position and that he would again be willing to employ 100 men without the subsidy or 110 with the subsidy of 10*s*. a week on each of the additional 10 men. But if the fixed reference date has been changed from January 1936 to January 1937, he will be promised a subsidy only on any men he employs in addition to the 110 he was employing in January 1937. In these circumstances he would qualify for no subsidy and would reduce

his employment again to 100. It is impossible to discover exactly how many men each employer would have employed at each date without a subsidy and then to offer the subsidy on every additional man employed. Some arbitrary reference date must be taken, and this date must be revised from time to time, though the scheme will be less efficient than it would be if all the necessary information could be obtained. But in spite of these defects a scheme of this kind might be an important aid in reducing unemployment without reducing the real wage obtained by the workers.

We have seen that it is possible to reduce the volume of unemployment without a fall in the hourly real wage-rate by restricting the hours of work worked by each man, by taking some persons off the labour market, and by removing taxes on employment or by subsidizing employment. But there is one important argument against the use of these methods. In order that people shall be as well off as possible, they must choose the proper balance between work and leisure. In Part IV, Chapter II, it will be argued that this result will be achieved if people are always paid hourly real wage-rates equal to their hourly marginal product and are then left free to decide—either individually, or where that is impossible, by the collective decision of their Trade Union representatives—how many hours they will work each day and how many days they will work in the course of their life. There may be special reasons for modifying this rule in special cases; for instance the school-leaving age may be fixed by legislation because children are not in a position to choose for themselves the most desirable balance between real income from work and the use of leisure in education. But apart from such exceptional cases we must conclude that unemployment should be cured by expanding the total money demand for commodities through the measures suggested in Chapters II to VI of this Part, even though this leads to some rise in commodity prices and so some fall in the real wage-rate. For the proper balance between work and leisure can be maintained only by removing restrictions on the hours of

work and the length of the working life, by removing all taxes levied on the number of people employed[1], and by refraining from the payment of subsidies to employment. If then we reject these schemes, we must rely on the other measures suggested in Part III to obtain a more equitable distribution of income.[2]

[1] In Chapter VI of this Part a reformed scheme for the finance of unemployment benefit was suggested, in which some contributions were to be levied from the workers and employers for each man employed. This scheme offends against the rule that no taxes should be levied directly on employment. But the scheme has important advantages as a means of preserving a high level of employment, and these advantages must be weighed against the disadvantages mentioned in the text.

[2] In Part II, Chapter VII, another way in which employment can be increased without any reduction in the real wage-rate will be discussed. In industries in which the labour market is imperfect, the fixing of wage-rates by Trade Unions or by Wage Boards will increase employment without any reduction in the real wage-rate. No exception can be taken to action of this kind provided that the Trade Unions fix the wage-rate demanded in such a way that full employment can be attained.

PART II
COMPETITION AND MONOPOLY

I
THE MEANING OF PERFECT COMPETITION

IN Part I of this book we discussed how all the factors of production may be brought into employment. In this Part we shall assume that all the factors of production are employed at making something, and shall discuss how they may be attracted to the production of those things which consumers most desire. Our first task is to see what determines which things will, and which things will not, be produced in an economic system in which there is competition between producers and in which property is owned and economic decisions are made by private individuals.

A great deal is written about the advantages of competition. The theoretical arguments in favour of such a system are strong and must be carefully studied; but most of these arguments rest upon a tacit assumption that there is 'perfect competition' in the economy. We must, therefore, at the outset explain what is meant by perfect competition, in order to understand the advantages of such a system. In Chapters IV to VI of this Part we shall study how competition in the real world departs from the perfection of the theoretic system discussed in this chapter.

The study of a perfectly competitive system is important for two reasons. First, it is impossible to understand the many arguments which are based on the tacit assumption of perfect competition, unless we know exactly what a perfectly competitive system implies. But secondly, apart from gaining an understanding of the text-book system, this study reveals certain fundamental principles, which it is important to understand before choosing between different economic policies.

Economic activity is made up of a process of buying and

selling commodities and services. These may be bought with and sold for money or exchanged for other things, i.e. bought with and sold for other commodities. The price of one thing is the amount of other things which can be obtained for the thing sold, and this price is usually expressed in a modern economic system in terms of money. Consumers and producers buy and sell commodities for money. Labourers and employers buy and sell the services of labour, and the money wage-rate is the price of labour. Lenders and borrowers buy and sell the use of a loan of money for a period of time, and the price of a money loan is the rate of interest, which is paid for it.

We say that competition is perfect when two conditions are fulfilled:

1. when there is no artificial restriction upon the movement of factors of production from occupation to occupation in search of the highest reward, and
2. when no single unit of control—i.e. no single individual or company which is deciding to buy or to sell something —can by its own action appreciably affect the price of the thing bought or sold.

1. The first condition implies that there are no artificial restrictions preventing labour from moving from a low paid to a highly paid occupation, or preventing owners of capital and land from lending these factors to those producers who offer the highest rate of interest or rent, or preventing producers of raw materials from selling their products to those who offer the highest price for them, or preventing new producers from setting up a firm in any industry in which abnormally high profits are to be obtained. We may give two examples of the artificial restrictions, which we are at the moment assuming away. First, a Trade Union or professional body may limit the number of new persons who can enter a particular occupation by restricting the number of apprentices or by charging unnecessarily high entrance fees to the profession, in order to maintain earnings in the occupation above the level of earnings in similar occupations.

Secondly, the state may limit by licence the number of producers who are allowed to produce a certain commodity.

2. The second condition needs more consideration. It implies that there is a large number of buyers and a large number of sellers, buying and selling identically the same article or service and each knowing the price at which others are buying and selling. An example will make this clear. Suppose that there is a large number of independent farmers producing wheat of a given quality and a large number of independent consumers of wheat, and that every farmer knows the price which every consumer is paying and every consumer knows the price at which every farmer is selling. The first consequence of these conditions is that all wheat will be sold at the same price at any given time. For if different prices were quoted in the market, the farmers would sell their wheat only to the consumers who were offering high prices, while consumers would buy only from the farmers charging low prices, and all differences in price would be abolished.

But the second and more important result of these conditions is that no producer or consumer could affect the price of the commodity by his own individual action. If there is a large number of consumers of an article, no single consumer is purchasing an appreciable proportion of the product, so that no single consumer can affect appreciably the total demand for the product by varying his own purchases. If there were a million consumers of bread each consuming a loaf a week, and if one consumer decided to increase his consumption by 100 per cent. and to consume two loaves instead of one, the total demand would only rise from 1,000,000, to 1,000,001 loaves a week. This increase in demand, though by no means negligible from the point of view of the single consumer, would be negligible from the point of view of the total demand for bread and would therefore exert a negligible effect upon the price of a loaf. Experience bears out this conclusion. No individual consumer of bread argues that if he increases his demand he will increase

the total demand for bread and so raise the price; each decides how much he will buy at current prices, assuming quite correctly that his demand being but a drop in the ocean will have no effect upon the price of bread. The same is true of the producers of bread. If there is a large number of them—say a million producers each producing the same output—a 100 per cent. increase in the output of one of them will only cause a millionth increase in the total supply and will therefore have a negligible effect upon it, and so upon the price of bread. Each producer will decide how much to produce at the current market price; no one of them will expect variations in his own supply to affect the market price.

This principle is true of the market for all commodities and for all services. If there is a large number of independent employers and workers, buying and selling labour of the same efficiency, with knowledge of the wages which other employers are offering and other wage-earners are demanding, no single employer will be able to affect the wage-rate of this labour by employing more or less men, nor will any one worker be able to raise or lower the wage-rate by offering less or more labour. If there is a large number of borrowers and lenders of capital, knowing the rates of interest at which loans are being made, no one of them alone can affect this rate of interest by offering to borrow or lend more or less. This does not imply that if all the buyers of a commodity decide to buy more of it, or if all the sellers decide to supply less of it, the price will not rise; it merely implies that in a perfectly competitive system no single buyer or seller will think that his own action will have any effect on the price of the commodity. Nor does this imply that a consumer or seller of a commodity will never expect a change in its price. A farmer in a perfectly competitive system will properly expect a fall in the price of wheat if he thinks that a large number of farmers are likely to put more wheat on the market than before; perfect competition simply implies that no single farmer will think that he can prevent, or in any way affect, this fall in price by restricting his own output.

We may draw certain important conclusions from this definition of perfect competition. We may first ask on what principles an individual consumer will spend his income in order to get as much out of it as possible, if he knows that he is unable to affect the price of any commodity which he buys. Suppose that an individual consumer, with given tastes and needs, has an income of 40*s.* a week to spend on commodities, and suppose that there are only two commodities on which he can spend this income—loaves of bread which cost 6*d.* a loaf and tea which costs 1*s.* a pound. (I take these figures for their convenience, not for their probability.) Suppose that he is buying 40 loaves of bread a week at 6*d.* each and 20 pounds of tea a week at 1*s.* a pound. Is he getting as much satisfaction as possible out of his income? It might at first sight be thought that since he is spending half his income on each commodity, he will be getting as much as possible out of his income, only if the *total* satisfaction which he gets from the 40 loaves a week is the same as the *total* satisfaction which he gets from the 20 pounds of tea a week. But this is not necessarily so. Since the price of a loaf of bread is 6*d.* and of a pound of tea 1*s.*, the consumer can have 2 more loaves of bread a week if he gives up 1 pound of tea a week. He can increase the total satisfaction which he gets out of his income by buying more bread and less tea, if the gain from having 42 instead of 40 loaves of bread a week is greater than the loss from having 19 instead of 20 lb. of tea a week, regardless of the total satisfaction which he is at present getting from the 40 loaves of bread or the 20 lb. of tea.

Suppose that it does pay him in this way to spend 1*s.* more on bread and 1*s.* less on tea each week. Will it pay him to spend still less on tea and still more on bread? He can still obtain 2 more loaves a week for the loss of 1 lb. of tea a week; and it may still pay him to reduce his weekly consumption of tea by a further pound from 19 to 18 in order to increase his weekly consumption of bread from 42 to 44 loaves. But this transference of expenditure from tea to bread will pay

him less than before. For the gain from having 44 instead of 42 loaves of bread a week will be less than the gain from having 42 instead of 40 loaves a week, because the more loaves he has the less will he want additional loaves; and at the same time the loss due to having 18 instead of 19 lb. of tea a week will be greater than the loss due to having 19 instead of 20, since the less tea he has the more will he feel the loss of a further pound. At some point, therefore, as he buys more loaves and less tea, he will find that the loss of another pound of tea a week would be greater than the gain from another 2 loaves of bread a week. At this point he cannot gain by buying more bread and less tea.

It follows from this that, if factors of production are moved from producing one commodity to producing another commodity in circumstances in which there has been no change of consumers' tastes or needs, the price of the commodity produced in smaller quantity will rise while the price of that produced in greater amount will fall. If a certain amount of tea is being produced and bought by consumers for 1*s.* a pound, while a certain amount of bread is being produced and bought by consumers for 6*d.* a loaf, consumers will be buying tea and bread in such amounts that to each consumer 1 lb. more tea is worth 2 loaves more bread. If now more tea and less bread are produced, consumers will have to purchase more tea and less bread. But if they have more tea and less bread the importance of having 1 lb. more tea will be reduced, while the importance of having 1 loaf more bread will be increased. This means that if the tastes and the income of consumers have not changed, an increase in the total supply of tea will cause a reduction in the price which consumers will give for it; on the other hand, a diminution in the total supply of bread will cause consumers to pay a higher price for each loaf.

This analysis is easily extended to cover the realistic case in which the consumer can choose between a large number of commodities which are offered in the market at different prices. The consumer will maximize the satisfaction which

he obtains from his income if he buys all commodities in such amounts that the marginal utilities of the commodities are in the same proportion as their prices. By the marginal utility of a commodity is meant the extent to which a consumer's satisfaction would be increased if he had one unit more of that commodity; and we have just shown that consumers will get the most out of their incomes if they purchase commodities in such amounts that the proportion between the prices of any two commodities is the same as the proportion between the importance of having a unit more of these same commodities.

We can express this same fact in a slightly different way, which is simpler for certain purposes. Each consumer should distribute his expenditure upon different commodities in such a way that he could not satisfy his needs more fully by spending 1*s*. less on one commodity and 1*s*. more on another. The amount by which a man's satisfaction is increased if he spends one more unit of money on tea at the current price of tea may be called the marginal utility of money spent on tea. We may now restate the condition in which a consumer will obtain the greatest possible satisfaction from the expenditure of a given income: he should spend his money in such a way on the different commodities that the marginal utility of money spent on each commodity is the same. The importance of having one shilling's worth more tea must at current prices be the same as the importance of having one shilling's worth more of every other commodity.

We can next discuss the results of perfect competition upon the conditions of production and sale, and for this purpose we must distinguish between the average cost of production of a commodity and its marginal cost of production. By the average cost is meant simply the cost per unit of output—including in the cost all the six items enumerated in Part I, Chapter I, pp. 2 and 3, namely, the wages, interest, rent, cost of raw materials, cost of maintenance of the capital equipment, and a sufficient profit to induce the owners and managers to undertake the effort and risks involved in the

business. By the marginal cost is meant the amount which is added to the total costs of a business by producing one more unit of output. The result of perfect competition is that the price of each commodity will be equal both to its average and to its marginal cost of production.

If producers are free to move from one occupation to another, each commodity will tend to be supplied in such amounts that its price is equal to its average cost of production. If the price offered for a commodity were above its average cost of production—which includes the 'profit' to producers necessary to make them continue production—new producers would enter this occupation in which abnormally high profits can be made. The total output would increase, and so the price offered for the product by consumers would fall. If, on the other hand, the price offered for a commodity were below its average cost of production, the existing producers would be making a loss, and would therefore move into other occupations; and this would continue until the total output was reduced and the price offered by consumers was therefore raised as high as the average cost of production of the commodity.

Two additions must be made to this argument. First, it may appear unreal to assume that if one commodity is being produced at a loss, there are necessarily others which are being produced at a profit. May it not be true that in a trade depression every commodity is being produced at a cost which is above the price obtainable in the market for that commodity? May it not be that at other times every commodity, or nearly every commodity, is being sold at a price above its cost of production? In a depression, therefore, since there may be no profitable commodities to produce, producers will have no incentive to turn from the production of unprofitable commodities; and if all commodities are being produced at costs lower than the prices at which they can be sold, new producers will not necessarily come in to increase the supply of every commodity which is being sold at a profit. But we are assuming that by the policies suggested in Part I the total

money demand for commodities in general is properly adjusted to their money costs of production; and in this case if some industries are depressed and making losses, there will be others that are at the same time more than covering their costs of production. The policy of Part I will bring it about that the whole of industry will neither be making losses nor profits, while the existence of perfect competition will *in these circumstances* ensure that each individual industry is neither making a loss nor a profit, since there would otherwise be an incentive to move from the unprofitable to the profitable occupations.

Secondly, the shift of producers from industries making losses to those making profits will not be immediate even in a perfectly competitive system. Manufacturers will have invested capital in the form of durable equipment in different industries, and it is neither possible nor profitable to shift from one to another more quickly than the capital can be moved from the first to the second industry. The transference of fixed capital goods such as factories, plant, and machinery from a depressed to a prosperous industry will take time, because existing machinery in the depressed industry takes time to wear out, while new machinery for the prosperous industry takes time to construct. Let us suppose that in coal-mining only 2 per cent. and in car manufacture 6 per cent. is earned on capital. It is profitable to shift capital from the coal-mines to motor-car firms. But in the coal-mines the capital takes the form of shafts, trucks, props, lifts, &c., none of which are of any use in a firm producing cars. The shift of capital from coal-mining actually takes place when those who direct the coal-mines refrain from using money to replace these capital goods when they wear out, and invest these sums either directly in some other business or in securities which earn a higher rate of interest. The actual equipment of the motor-car industry can only be increased when sufficient time has elapsed for labour, land, and capital in the engineering trade to produce more machinery for the use of motor-car manufacturers. But

though the shift of producers from one industry to another may take some time, in a perfectly competitive system in which the factors of production are free to move, the shift will in the end take place, and all commodities will tend to be sold at prices equal to the average cost of production.

In perfect competition the price of each commodity will tend to be equal to its marginal cost as well as to its average cost of production. In order to maximize his profit each producer will produce more, so long as what he adds to his costs by producing another unit—which we call his marginal cost—is less than what he adds to his receipts by selling another unit. In perfect competition no single producer can affect the price offered for his product by selling more, so that by selling an extra unit he adds to his receipts the price of that extra unit. In perfect competition each producer of each commodity will therefore extend his production, until the price offered for his product is equal to the amount which he must pay for the additional factors of production required to produce an extra unit, so that the price of each commodity will tend to be equal to its marginal cost of production.

But is it certain that in perfect competition the price of a commodity can be equal both to its average and to its marginal cost? An individual unit of production, which we will call a 'firm', may be too small or too large to be producing in the most efficient manner. If a firm is too small, it cannot reap the advantages of 'mass production'. It does not pay to put in certain efficient types of machinery, which are large and costly, unless the output of the firm using that machinery is sufficiently great to ensure that it will be fully used; and once the machinery has been installed, a large output can be produced with it without adding to the costs proportionately, since the single block of machinery can serve a large as well as a small output. Even in occupations in which mechanical methods are not important, there must be at least one man with a minimum amount of capital and land, and this 'one-man firm' can, up to a point, produce more without a propor-

tionate increase in total costs. On the other hand, when firms become too large, the average cost of production is likely to rise because the firms become too unwieldy for a single management; for some single person must be responsible for the final decisions and for the co-ordination of the different branches of every business unit. At some point after the economies of large-scale production have been well utilized, and before the firm has become too large for a single management, the average cost of production will be a minimum. When the output has reached this size, we may say that the firm is of the 'optimum' size.

In perfect competition the individual firms will tend to be of this optimum size. If the demand price ruling in the market were below the average cost of a firm of the optimum size, no firm in the industry could cover its costs. Firms would leave the industry and the total output put on the market would diminish, until the demand price had risen to cover the average cost of firms of the optimum or most efficient size. If, on the other hand, the demand price were higher than the average cost of a firm producing the optimum output, firms in this industry could make a profit over and above their costs by producing an output near their optimum output and selling it at a price higher than its cost. In consequence new firms would be attracted to the industry and the total output would increase, until the demand price had fallen to the average cost of a firm producing the optimum output.

Perfect competition would therefore cause the price offered for the commodity to be equal to the cost of production of a firm of the most efficient size. Any firm which produced more or less than this optimum output would make a loss, since its average cost would be raised above the market price of the commodity. In these conditions each firm would tend to be of the optimum size; for only a firm of the most efficient size could cover its costs.

It can, however, be shown that when a firm is of the optimum size, its average cost will be equal to its marginal cost of

production. The relationship between average and marginal costs can be explained by means of an analogy. Suppose that a batsman has a batting average of 20 runs per innings. If by going in for another innings he brings this average down, he must have made a score of less than 20—i.e. he must have added to his total score up to date a figure less than his existing average; if he does not change his average, he must have scored 20; and if he raises it, he must have scored more than 20 in the new innings. In the same way suppose a producer to be producing a certain output at an average cost of 20*s*. per unit. If by producing another unit of output the producer causes the cost per unit of output to fall, he must have added something less than 20*s*. to his total costs by producing the extra unit; if he causes no change in the cost per unit of output, he must have added exactly 20*s*.; and if he causes his average cost to rise, he must have added more than 20*s*. to his total cost. The marginal cost is only another term for 'what a producer adds to his total costs by producing another unit'. So long, therefore, as a firm's average cost can be lowered by an increase in output, the marginal cost is below the average cost; if a firm's average cost would be unchanged by an increase in output, the marginal cost is equal to the average cost; and as soon as an increase in output would cause a rise in a firm's average cost, the marginal cost is higher than the average cost. A firm is, however, of the optimum size when its average cost has just ceased to fall and has not started to rise, so that at this point the marginal cost must be equal to the average cost. And, as we have already shown that in perfect competition a firm will be of the optimum size, we may conclude that in perfect competition firms will be of that size at which the price of the product can be equal both to the marginal and the average cost of production.

The argument that in perfect competition the price of each product will be equal to its marginal cost can also be expressed by saying that each factor of production will be paid a reward equal to the value of its marginal product. We have already explained in Part I, Chapter VII, what is meant by the

marginal product of labour. If a producer of boots, by employing one more man with an unaltered amount of the other factors, can produce 2 more pairs of boots a day, then the marginal product of labour is 2 pairs of boots a day. Similarly, if by employing one more machine with the same amount of labour and land he can produce 3 more pairs of boots a day, then the marginal product of a machine is 3 pairs of boots a day. The marginal product of any factor of production in any industry is the amount by which the output would be increased, if one more unit of that factor of production were employed with the same amount of the other factors of production. The value of the marginal product of any factor is the price at which its marginal product can be sold in the market; if the marginal product of labour in the boot industry is 2 pairs of boots and if boots sell at 10*s*. a pair the value of the marginal product of labour in this industry is £1.

If there is perfect competition, a producer will employ each factor up to the point at which the price which he pays for the factor of production is equal to the value of the marginal product of that factor. The reader is referred to pp. 63–6 of Part I, Chapter VII, for a full discussion of this point; here we may summarize the conclusion of that section. What an employer gains by employing another man is the price at which he can sell the additional output due to his employment, i.e. the value of his marginal product, less the cost of employing another man, i.e. the wage-rate of labour. In a perfectly competitive system, therefore, every employer tends to employ more labour, so long as the wage-rate is below the value of the marginal product of labour, and to dismiss labour, if the wage-rate is above this value. The same argument applies to land and capital. A producer will, for example, put in more capital in the form of machinery, if the annual cost of interest and maintenance of the machine is less than the value of its marginal product (i.e. than the price which he can get for the addition to his output caused by putting in the extra machine).

The marginal product of any particular factor of production falls as more of it is employed, but rises if there is an increased employment of the other factors with which it co-operates in production. This fact is of great importance in the development of our argument. If a producer has much machinery and land but little labour, the marginal product of machinery and land will be small and the marginal product of labour will be great; for he will be able to add little to his product by taking on still more machinery and land, but it will be important to have a larger labour supply to work the machinery. But if he had much labour and little land and machinery, the productiveness of another labourer would be small, as his machinery and land would already be overcrowded; while it would add considerably to his product to take on more machinery and land to employ with his excessive labour force. For this reason the marginal product of any factor depends not upon the absolute amount of that factor employed, but upon the proportion between the amount of that factor and the amount of other factors employed.

We have seen that in perfect competition more of each factor of production will be employed in each industry until the reward paid to the factor is as great as the value of its marginal product. If, therefore, the factors of production are free to move from the occupations in which their earnings are low to those in which their earnings are high, they will move from industries in which the value of their marginal products are low to those in which the value of their marginal products are high. This movement of factors will go on so long as there is any difference in their earnings, so that perfect competition will cause the value of the marginal product of each factor to be the same in every industry. Suppose that the value of the marginal product of labour is higher in industry A than in industry B. This means that higher wages will be offered in industry A than in industry B, and labour will tend to move to industry A. But two things will happen. In industry A the marginal product of labour will fall as more labour is employed with the given equipment in that

industry, and at the same time the price paid for the product of industry A will fall as more of this product is produced and offered for sale. For both of these reasons the value of the marginal product of labour will fall in industry A. The opposite will happen in industry B. As labour moves from that industry and less is produced there, the marginal product of labour will rise and the price offered for the product will rise. There will be a double set of influences lowering the value of the marginal product of labour in industry A and raising its value in industry B, and the movement of labour to industry A will continue until the value of its marginal product is the same in each industry.

These conclusions would, of course, be true only if there were *no* restriction on the movement of factors of production between different industries. But even if all unnecessary restrictions of movement (such as legal restrictions or ignorance of the possibilities of moving to a job in which wages were higher) were removed, an unavoidable economic cost may be involved in such movement. Labour will be attracted from industry B to industry A, only if the wage offered in industry A is so much greater than the wage offered in industry B that the increase in earnings offsets any cost involved in this movement. Suppose that it costs a labourer £100 to move to industry A from industry B, because the change involves a geographical move or the learning of a new trade. Suppose, further, that the value of the marginal product of labour in industry A, and so the wage offered in industry A, is £6 a year greater than the value of the marginal product of labour, and so the wage offered to labour, in industry B. Then the expenditure of a capital sum of £100 on the move would raise his earnings by £6 a year, and this represents a yield of 6 per cent. on the money invested in the move. Only if the labourer could borrow money at a rate of interest lower than 6 per cent. would the move be worth his while. We should restate our previous conclusion more accurately by saying that in perfect competition the difference between the value of the marginal product of any factor of

production in any two industries cannot remain greater than the cost of movement of that factor between the two industries; and we must reckon this cost as the interest which would have to be paid on the sum borrowed for the move. For this reason, even in a perfectly competitive community, any existing distribution of factors of production either among different occupations or among different districts tends to be continued, even though this distribution of the factors of production was due in the first place to chance or to historical causes, which are no longer of importance. In future when any argument is based on the statement that one factor will move to one industry from another, because the reward offered for it is higher in the one industry than in the other, the passage must be understood to be subject to this modification. This modification will be expressly mentioned, only when it makes an important difference to the argument.

II

THE ADVANTAGES OF PERFECT COMPETITION

IN the last chapter we explained the meaning of perfect competition and outlined the principles on which the factors of production would be distributed among different occupations in a perfectly competitive system. In this chapter we shall show that such a system has three fundamental advantages. First, it would be impossible by producing more of one thing and less of another to make any one consumer better off without making other consumers worse off. Secondly, output would be maximized in the sense that it would not be possible with a given amount of the factors of production to produce more of one commodity without producing less of some other. Thirdly, each individual firm would be of the most efficient size.

The first advantage—that it would not be possible by producing more of one thing and less of another to make any one consumer better off without making other consumers worse off—follows from these two facts:

(i) that each consumer spends his money on the different commodities in such a way that the marginal utility of the money spent on each commodity is the same, and

(ii) that each factor of production moves into that industry in which the value of its marginal product is highest.

Let us consider again the production and sale of two commodities, bread and tea. Each consumer spends his money in such a way that the marginal utility of the money spent on each commodity is the same, so that each consumer would be just willing to give up an amount of bread which sells for 1*s*. in exchange for an amount of tea which sells for 1*s*. Any one consumer would therefore be better off if he were given an amount of tea which at current prices sells for more than 1*s*. in exchange for an amount of bread

which at current prices sells for 1*s*. Thus it would be possible for one consumer to be better off without any reduction in the welfare of other consumers, if it were possible for the community to produce an amount of tea which at current prices sells for more than 1*s*. by giving up an amount of bread which sells for 1*s*.; for every other consumer could then have the same amount of every commodity, while a single consumer could be given more than one shilling's worth of tea in exchange for one shilling's worth of bread. But such a change in the output of different commodities would be brought about automatically by the forces of competition, if it were possible. For suppose that it is possible by shifting a unit of labour from the bread to the tea industry to produce an amount of tea which at current prices sells for more than 1*s*. at the sacrifice of an amount of bread which sells for 1*s*. The value of the marginal product of labour must be higher in the tea industry than in the bread industry, so that labour will automatically be attracted from the bread industry to the tea industry; or, in other words the marginal cost of an amount of tea which sells for 1*s*. must be less than the marginal cost of an amount of bread which sells for 1*s*. But in perfect competition, as we have seen, the factors of production will be automatically so distributed among different occupations that the value of the marginal product of each factor is the same in every industry, and the marginal cost is equal to the price of the product in every industry.

This is still true if we take into account the fact that a factor of production will move from one industry to another only if the value of its marginal product in the one industry exceeds the value of its marginal product in the other by more than the cost of movement. Suppose that the value of the marginal product of labour is £6 a year greater in the tea industry than in the bread industry, that it costs a labourer £100 to move from the one to the other, and that the rate of interest is 8 per cent. per annum. In these circumstances labour will not move to the tea industry, because although its earnings would be raised by £6 a year it would lose £8 a

year in interest on the cost of movement. Yet it may seem that in these circumstances it would be possible to improve one consumer's position without making any other consumer worse off; for the shift of a unit of labour from the bread industry to the tea industry would increase the output of tea by an amount which at current prices sells for £6 more—and is therefore worth £6 more to the consumer—than the amount by which the output of bread would be reduced. But the production of a certain amount more tea involves not only the use of one less labourer in the bread industry but also the use of £100 less capital in some industry or another;[1] for £100 must be invested in the cost of moving the labourer. In perfect competition the price offered for capital will measure the value of its marginal product. If, therefore, the rate of interest is 8 per cent., the use of £100 less capital in any industry will diminish the annual output of that industry by an amount which sells for £8. If, therefore, one unit of labour were moved from the bread industry to the tea industry, two things would happen: there would be an increase in the output of tea, worth £6 more to consumers than the reduction in the output of bread; but because of the investment of £100 capital in the cost of moving, the output of some other commodity would be reduced by an amount worth £8 to consumers. Allowing for both these facts, it would not be possible to improve the position of one consumer without worsening the position of others. This would be possible only if the interest on the cost of movement were less than the increase in the value of the marginal product of the factor due to the move; but these are just the conditions in which the automatic forces of competition will themselves produce the desired movement of factors.

The second advantage of perfect competition is that the factors of production will always be employed in the most

[1] The reader is reminded that we are arguing on the assumption that full employment is being maintained by the measures discussed in Part I, so that it is impossible to spend £100 on moving a worker without less of something else being produced.

efficient combinations in different industries, so that if there is full employment it will be impossible to produce more of one commodity without producing less of some other. This can best be shown by an example. Let us imagine that by moving labour from the production of tea to the production of bread, and at the same time moving capital from the production of bread to that of tea, it is possible to produce as much tea and more bread than before. This can only be the case if the ratio between the marginal products of labour and of capital in the one industry is different from the ratio between the marginal products of labour and of capital in the other industry. Suppose that in the bread and tea industries the marginal products of labour and capital are as shown in Table IV.

TABLE IV

The Ratio between the Marginal Products of Two Factors differs in Two Industries

BREAD INDUSTRY	
Marginal product of labour	4 loaves a day
Marginal product of capital	4 loaves a day
TEA INDUSTRY	
Marginal product of labour	1 lb. a day
Marginal product of capital	3 lb. a day

By shifting one unit of labour from tea to bread the output of tea will be reduced by 1 pound a day, and the daily output of bread will be increased by 4 loaves. If at the same time one unit of capital is shifted from producing bread to producing tea, the output of bread will fall again by 4 loaves, and the output of tea will rise by 3 lb. a day. The combined result, therefore, of these two shifts is that the output of bread remains the same, while the output of tea rises by 2 lb. a day. The factors of production were not being used in the most efficient proportions, since by using a larger proportion of labour to capital in producing bread and a smaller proportion in producing tea the output of tea could be increased without diminishing the output of bread.

Perfect competition would automatically readjust this position, if it existed. In perfect competition each factor will be paid the value of its marginal product, so that in the circumstances illustrated in Table IV a unit of capital in the bread industry would be paid the same as a unit of labour, whereas in the tea industry a unit of capital would be paid three times as much as a unit of labour. Capital would be attracted into the tea industry and labour into the bread industry. And this movement would continue so long as the ratio between the marginal products of capital and labour was higher in the tea industry than in the bread industry.

But as labour moved into the bread industry and capital left it, the marginal product of labour would fall and that of capital would rise; for when a large proportion of labour to capital is employed, it becomes less important to have one more unit of labour and more important to have one more unit of capital. Similarly, as capital moves into the tea industry and labour leaves it, the marginal product of capital will fall and the marginal product of labour will rise. The movement of the factors of production will therefore raise the marginal product of capital in the bread industry and lower it in the tea industry. At the same time it will lower the marginal product of labour in the bread industry and raise it in the tea industry. We shall then reach a situation of the kind shown in Table V.

TABLE V

The Ratio between the Marginal Products of Two Factors is the same in Two Industries

BREAD INDUSTRY	
Marginal product of labour . .	3 loaves a day
Marginal product of capital . .	5 loaves a day
TEA INDUSTRY	
Marginal product of labour . .	1½ lb. a day
Marginal product of capital . .	2½ lb. a day

In these conditions, in both industries the marginal product or the reward of labour is three-fifths of the marginal

product or the reward of capital, and competition will not cause any further change in the proportions, in which labour and capital are employed in the two industries. But these are precisely the conditions in which it is impossible to produce more of one commodity without producing less of the other. Suppose that 5 units of labour are shifted from the bread industry to the tea industry; the output of bread will fall by 15 loaves and the output of tea will rise by $7\frac{1}{2}$ lb. Since the marginal product of capital is 5 loaves, it will be necessary to shift 3 units of capital into the bread industry to make the output of bread rise again by 15 loaves, in order to prevent any net fall in its output. But the loss of 3 units of capital from the tea industry will cause the output of tea to fall again by $7\frac{1}{2}$ lb. to its previous level. Thus when the ratio between the marginal products of the two factors is the same in both industries, it is impossible to increase the output in one industry without reducing the output in the other.

It must be realized that Table V only shows that the payment of a unit of labour will be three-fifths of the payment of a unit of capital in the tea industry and in the bread industry; it does not show that labour and capital will be getting the same payments in each industry. This will be so only if the demand price of a pound of tea is twice that of a loaf of bread. Suppose that the price of a pound of tea is 1*s.* and that of a loaf of bread 6*d.* Then the payment of a unit of labour in the bread industry will be $3 \times 6d.$ and in the tea industry $1\frac{1}{2} \times 1s.$, i.e. 1*s.* 6*d.* in both industries. The payment of a unit of capital will be $5 \times 6d.$ in the bread industry and $2\frac{1}{2} \times 1s.$ in the tea industry, i.e. 2*s.* 6*d.* in both industries. But if the price of a loaf is 3*d.* and that of a pound of tea is 1*s.* 6*d.*, labour will be paid $3 \times 3d.$ or 9*d.* in the bread industry and $1\frac{1}{2} \times 1s.$ 6*d.* or 2*s.* 3*d.* in the tea industry; while capital will be receiving 1*s.* 3*d.* in the bread industry and 3*s.* 9*d.* in the tea industry. In this case both labour and capital will move from the bread to the tea industry, where their earnings are higher. The output of bread will fall and its price will rise, while the output of tea will increase and its price fall.

The factors of production will continue to move from the bread industry to the tea industry, until the price of bread has risen and that of tea has fallen sufficiently to enable each factor to earn the same in each industry; but it will, of course, follow that the ratio between their earnings in each industry is the same. In other words, perfect competition will cause the ratio between their marginal products in each industry to be the same; and we have seen that this is the condition in which it is impossible so to increase the output of one commodity without diminishing the output of another.

This result is not modified by taking into account the fact that factors of production will only move from one occupation to another if the difference in their earnings more than covers the cost of movement. Suppose that in the tea industry the value of the marginal products of both capital and labour is £300 a year, while in the bread industry the value of the marginal product of capital is £300, but the value of the marginal product of labour is only £294 a year. Here is a case in which the shift of a unit of capital from the tea to the bread industry together with the shift of a unit of labour from the bread to the tea industry would increase the output of bread without reducing the output of tea. For there will be no change in the output of tea, in which the marginal products of labour and capital are the same; and the output of bread will be increased, because an additional unit of capital adds more to the product than is lost through the disappearance of one unit of labour. Suppose, however, that it costs labour £100 to move from the bread to the tea industry; and suppose further that the rate of interest is 8 per cent., so that the cost of movement of labour can be represented by £8 a year. It will not pay labour to move from the bread industry to the tea industry, because the rise of £6 a year in labour's earnings would be more than offset by the fact that it costs £8 a year to move. But in these circumstances the shift of capital from the tea industry to the bread industry with a corresponding shift of labour from the bread to the tea industry will no longer cause the output of bread to

increase without any diminution in the output of tea. It is still true that if one more unit of labour and one less unit of capital is used in the tea industry the output of tea will not be changed. But in the bread industry, while as before there will be one less unit of labour and so a reduction in output worth £294, there will not be one more unit of capital available to increase the output by an amount worth £300. For although one less unit of capital is needed in the tea industry, £100 of this capital must be invested in the cost of shifting labour from the bread to the tea industry; and since the marginal product of capital is 8 per cent., this in itself will cause the output of bread to be reduced by an amount worth £8. Only if the marginal product of capital, and so the rate of interest, were less than 6 per cent., would a net increase in the output of bread be possible without any change in the output of tea. But if the rate of interest were lower than 6 per cent., it would pay labour to shift from producing bread to producing tea.[1]

Finally, in a system of perfect competition each individual firm will be of the most efficient size. We have already proved this by showing in Chapter I of this Part (p. 105), that the freedom of producers to move from one industry to another will cause the price of each product to be equal to the average cost of production of a firm of the optimum size, so that each firm must be of the optimum size in order to cover its costs.

[1] In reality the rate of interest at which workers could borrow money to move to another occupation would be much higher than the rate at which capital could be borrowed for investment in industry. But this is one of those 'artificial' restrictions on the free movement of capital from one use to another, which at the moment we are assuming away.

III

THE DISADVANTAGES OF PERFECT COMPETITION

IN the remaining chapters of this Part our attention will be turned to a criticism of *laisser-faire*.[1] By *laisser-faire* we do not necessarily mean an economic system, in which there is perfect competition; we mean simply an economic system in which there is a minimum of state interference. We shall see in Chapters IV and V of this Part that the absence of such interference does not necessarily lead to perfect competition. Our criticism of *laisser-faire* therefore will fall into two parts: the first, which we shall undertake in this chapter, showing that even if there is perfect competition there are disadvantages to be set against the three advantages which we have discussed in the last chapter; the second, which we shall undertake in Chapters IV to VI of this Part, showing that *laisser-faire* in many cases does not lead to perfect competition and therefore does not necessarily lead to the three fundamental advantages of perfect competition.

It is hardly necessary to point out, as a criticism of a system of perfect competition, that there are certain activities which for one reason or another cannot be performed by private individuals. There are three functions of government, namely, defence, police, and the administration of justice, which require the purchase and sale of goods and services by the state, and which for obvious reasons cannot be left to the free play of competitive forces: individual citizens cannot be left to buy and sell justice in competition. Government interference with a competitive system in order to raise money by taxation for the communal satisfaction of these needs is clearly justifiable. How much should be spent by the state on these services is mainly a political question, into which we

[1] In Part I we have already suggested certain ways in which the state should intervene in economic affairs in order to prevent unemployment. The remaining chapters of this Part suggest reasons for state interference of a different kind.

shall not enter; but there are certain obvious economic considerations to be taken into account in making these decisions. For example, a rich community, in which the real income of the average individual is high, can properly afford to spend more than a poor community on the provision of an efficient system of police and justice, because the use of men and commodities for the provision of extra efficiency in these services, rather than for the provision of commodities and services supplied by the ordinary competitive processes, will entail a smaller burden on a rich than on a poor community.

Apart from this there are three main criticisms, which can be directed against an economic system of perfect competition combined with freedom of movement for the factors of production. The first is that it would not bring about the production of those commodities which are most beneficial to consumers, because consumers fail to distribute their expenditure wisely among different commodities. If consumers did consider carefully the importance of having a little more of this and a little less of that, and if they did know what was best for them, perfect competition and freedom of movement of the factors of production might cause the economic resources of the community to be set to work on the production of commodities in amounts which satisfy their needs most fully. But do consumers really know what is best for them? This criticism depends upon fundamental questions of psychology and politics, which it is my desire to avoid in this book. But this question is of such great importance in the formation of economic policy that it is well to discuss the problem shortly, although the conclusions reached are largely a matter of personal opinion. Do individuals know better than the state or some other semi-official body what is best for them? Obviously in certain cases they do not. A man who is ill will go to the doctor for a prescription; he will not choose his own drugs from the chemist's shop. But this is not a case for interference with the workings of perfect competition. For the consumer,

realizing that he does not know the 'marginal utility' of different drugs, will inquire of some one who does know. It is only in cases in which the consumer does not know what will satisfy him most, but thinks that he does, that a case can be made out on these grounds for interfering with the free choice of consumers. There are many cases in which this may be true. While a man who is ill may go to a doctor rather than prescribe medicine for himself, he may underestimate the importance of spending money on medical services as a whole. He may put off going to the doctor, until an ailment is well advanced under the misapprehension that nothing much is wrong, or he may habitually underestimate the risks of his falling ill and fail in times of health to put aside sufficient to meet the probable medical costs which he must face in times of sickness. If people habitually spend too little on medical advice, there is a strong case for some form of state subsidization of medical services or for the state provision of compulsory insurance against illness. Or again people may underestimate the advantages of education and the state may be a better judge than the majority of people as to how much should be spent on education; if this is so, there is a strong case for interference by the state to make education cheaper to people than it actually is.[1] Or drug addicts may, at the moment that the desire for the drug seizes them, greatly overestimate the advantages to be gained from the drug. Here again the state has a strong reason to interfere with perfect competition by means of a prohibition or limitation of the sale of the drug.

Whether the reader agrees with these particular examples or not, there are occasions on which the individual consumer either loses control of himself or else is ignorant, so that he does not spend his income in the way that satisfies him most. It may be agreed in principle that in these circumstances the state should interfere, if it is likely to know better than the

[1] That this is by no means the only argument in favour of subsidizing education will become apparent when the distribution of the national income is discussed in Part III

individual how his need may best be satisfied, and that it should control his purchases by means of taxes, subsidies, prohibition, rationing, &c. But in many cases of this kind what is most desirable is state action designed to remove the consumer's ignorance. For instance, should the consumer buy pasteurized milk? Some persons hold the view that pasteurizing milk diminishes the chance of it causing tuberculosis, while others believe that it increases the risk of rickets. Can the ordinary consumer properly decide whether to pay a certain amount extra for pasteurized milk? Mrs. A may buy pasteurized milk, though it costs her more, because Mrs. B tells her that Mrs. C's daughter died of tuberculosis and did not drink pasteurized milk. Mrs. D may avoid pasteurized milk because Mrs. E tells her that Mrs. F's son suffered from rickets and always drank pasteurized milk. Do Mrs. A and Mrs. D really have sound reasons for their choice? Could not the state intervene with advantage, put the question to the decision of expert opinion and compel Mrs. A or Mrs. D to change her habit of life? If the answer of the experts were overwhelmingly in favour of the one course or the other, there would be a strong case for such action. But quite possibly expert opinion would say that there is a certain added risk of tuberculosis if milk is not pasteurized and a certain added risk of rickets if milk is pasteurized. In these circumstances it is extremely important that the state should discover the most reliable answer to the question and make every effort to inform Mrs. A and Mrs. D, so that they know what are the risks involved. Mrs. A can then decide best for herself whether she thinks that the extra amount which she pays for pasteurization of her milk is worth the lessened risk of tuberculosis and the greater risk of rickets.

To state briefly my own opinion, in some cases there is a case for direct state interference with the consumer's choice, when it is probable that the consumer will otherwise buy something which is definitely harmful to himself or neglect something which is of benefit. There is a strong case, where

technical ignorance is likely to affect the consumer's choice, for the promotion by the state of expert investigation in order to inform public opinion. But in the majority of commodities consumers should retain their freedom of choice. Whatever economic system may be adopted, there will be a definite loss involved if for the vast majority of commodities some mechanism analogous in its effect to competitive prices is not maintained; otherwise it would always be possible to satisfy consumers' needs more fully by shifting the factors of production from one industry to another to produce more of one commodity and less of another.

The second main criticism is that the extra cost to the community of providing one more unit of a particular commodity may not always be the same as the extra cost to the individual producer. The costs to the community of providing more of a commodity may be greater than or less than the costs to the individual producer, and we may explain the possibility of such differences by means of illustrations. Let us first take a case in which the cost to the community is greater than the cost to the individual producer. Let us suppose that factories in one industry in a certain district cause a great deal of smoke in the course of their activities, and that this annoys private residents and other producers in the district. The private residents and other producers will have either to put up with dirty conditions of life and work or will have to spend more on cleaning their clothes, rooms, and offices. The cost to the community of producing the product of the smoky factory is the cost to the individual firm producing it—let us say this is £2 a unit—plus the extra amount which other persons in the district must spend on removing the dirt caused by the excessive smoke; and let us suppose this amount to be 10*s*. for every unit of the commodity produced. (Even if these other persons do not actually spend extra money on cleaning up the dirt left by the smoke-polluted air, they will lose in welfare because of their dirty conditions, and some allowance must be made for this.) Since the cost to the individual producers of producing

one more unit of the commodity is £2, competition will cause this commodity to be sold in the market for £2. But it costs the community £2 10*s*. to produce another unit of the commodity.

This commodity will be produced and sold in quantities greater than are advantageous to the community. For since it will sell for £2, consumers will buy it up to the point at which the importance of having one unit more of it will be the same to them as the importance of having one unit more of other commodities, which cost the community £2 to produce; whereas if consumers are to get the greatest possible satisfaction from the use of the existing factors of production, they should purchase it only up to the point at which the importance of having one unit more of it is the same as the importance of having one unit more of other commodities, which cost the community £2 10*s*. to produce. There is a case for interference by some public body to make the producers of this commodity bear the cost of the smoke, either by insisting on the use of devices which will prevent the excessive smoke or else by taxing this commodity 10*s*. a unit. The choice between these methods will depend among other things upon whether the cost of smoke-abatement devices is greater or less than 10*s*. a unit of output; if the cost is less than this figure then the insistence on smoke-abatement devices is preferable to the tax of 10*s*. a unit of output.

Next we may give an example of a case in which the cost to the community of producing a particular commodity is less than the cost to the individual producer concerned. Suppose that a farmer or landowner is considering the advantages of draining a particular piece of land and that in order to undertake this work he must borrow £100 at a rate of interest of 5 per cent. If the drainage would add an amount to his annual crop which he could sell for £4 a year, it will not be worth his while to undertake the development. And if this is the whole result of his action it is best for the community that he should not undertake the work; for the fact that 5 per cent. is being offered by other persons for capital means that

other persons can find uses for an extra capital sum of £100, which will add to their output an amount which consumers value at £5 a year. But it may be that the draining of this farmer's land will indirectly help to drain the land of a neighbouring farmer, and will therefore add an amount to his neighbour's output which consumers value at £2 a year. If this is the case, the investment is desirable; for its marginal product is 6 per cent. from the point of view of the community. But the farmer himself will not undertake it. In this case there is an argument in favour of intervention by the community to encourage production beyond the limits which will be brought about by perfect competition; and this can be done either by legal arrangements by which the individual farmer can obtain compensation from his neighbour for the advantages conferred upon him by the investment, or else by a subsidy paid by some public authority on this type of investment.

There is a third criticism of perfect competition, which is far-reaching in its effects. There is no reason to believe that a perfectly competitive economic system will distribute income among different consumers in the most desirable way. This objection to competition is only mentioned at this point, because the whole of Part III is devoted to its discussion.

IV

IMPERFECT COMPETITION BETWEEN SELLERS

IN Chapter II of Part II of this book certain fundamental advantages of a perfectly competitive economic system were discussed. It is the object of this and the following chapters to demonstrate that, even if there is no government interference in economic matters, conditions of competition in the real world are not perfect, and that for this reason the advantages claimed for a competitive system in Chapter II of this Part in actual fact only apply with considerable modification. An attempt will then be made to discuss the way in which the disadvantages due to the imperfection of competition may be removed.

On page 96 we stated that for competition to be perfect, no single buyer or seller must be able to exercise any appreciable control over any price. It was argued that, for this to be so, the following three conditions must be satisfied:

(a) there must be a large number of independent sellers;
(b) there must be a large number of independent buyers; and
(c) the market for the commodity must be perfect in the sense that every buyer must buy from the seller who is offering the lowest price and every seller must sell to the buyer who is offering the highest price.

It is the object of this chapter to investigate the conditions in which a single seller will be able to affect the price of the commodity by selling more or less of it. In the next chapter we shall investigate the conditions in which a single buyer of a commodity can affect its price.

A single seller of a commodity will be able to affect the price of the commodity, if there is not a large number of sellers of that commodity. In that case each seller will be selling a large proportion of the total output of the commodity and will thus appreciably affect the total supply of the commodity by selling more of it. If there were only two producers

of motor-cars, each one producing half the total output, either of them would increase the total output of cars by 5 per cent., if he increased his own output by 10 per cent. In these circumstances neither of the producers would assume that the price of cars was unaffected by the number of cars which he produced, since he would realize that if 5 per cent. more cars are to be bought the price at which they are offered to the purchasers must be lowered. This would be true even if there were a perfect market for the sale of cars, in the sense that both producers were producing identically the same product and the consumers always bought from the producer who offered cars at the lower price.

Even if there is a system of complete *laisser-faire*, the number of independent producers of a commodity will not necessarily be great. The most obvious case of this is when the legal ownership of a particular raw material is in one or a few hands. In this case the single owner, or any one of the few owners, could appreciably affect the total supply of the raw material and could therefore control its price within certain limits. By restricting the supply of this commodity the producer could raise the price above the cost of its production and so make a monopoly profit, i.e. an income which is greater than would be necessary to induce him to continue producing that amount of the product if he were unable to control its price. In other circumstances, the fact that he was making such abnormal profits would induce other producers to enter this line of business, so that the number of producers would grow and the price would be reduced to the cost of production of the commodity. But such action is impossible when the production is in the hands of a few and there are no other supplies of it to be developed. There are probably few if any cases in which there is only one or a very limited number of natural sources of supply of a raw material. But even if there were a large number of such sources of supply, an artificial monopoly of this kind could be created if all, or a large proportion, of the owners of such sources agreed together to restrict the supply, so that a large propor-

tion of the available sources were brought under a single ownership or a single unit of control. If all the owners of coal-mines agreed together to restrict their output and so to raise the price of coal, each would be able to gain by the fact that the price of coal was raised above its cost of production; and the high profits of coal-mining could not attract new persons into the industry, simply because there were no other coal-fields.

It might appear that apart from this possibility the number of independent producers competing in the production and sale of any commodity could not be successfully restricted, unless the state restricted by law the number of persons who are allowed to produce. Otherwise as soon as any artificial restriction of supply by a combination of the existing producers caused a rise in the price of the commodity above its cost of production, the abnormal profits so earned would attract other producers into this line of business, so that the production would again fall into the control of a large number of independent producers. But this is a mistaken view. There is another reason why a small number of producers may maintain a monopoly position, and this reason is by far the more important in the modern world.

It has already been argued in Chapter I of this Part (p. 105) that there is an optimum size for a firm, that as the output of the firm grows up to this optimum output the average cost of production will fall and that as the output grows beyond this optimum amount the average cost of production will rise. In industries in which the technical economies of large-scale production are very important, the total demand for the product of the whole industry may be small in relation to the optimum output of a single firm. It may be that one or two firms of the optimum size would produce sufficient to satisfy the whole of the consumers' demand for the product; and in some cases the total consumers' demand may be less than the optimum output of a single firm. In such cases the absence of government inter-

there may be a very large number of independent sweet shops in a district, each of which has a very small turnover and is therefore of less than the most efficient size. None of them may be able to expand profitably at the expense of the others, because each has a special semi-independent market protected by the irrational goodwill of its customers. The management of each shop may be receiving a reward no greater than similar management in other occupations, because it is perfectly open for more people to set up sweet shops so long as an abnormally high reward for management is obtainable in that occupation. Yet each shop is monopolistic according to our definition, since each could sell more sweets only by offering them at a considerably lower price. In cases in which monopolistic conditions exist although all factors of production are free to move in search of the highest rewards, the number of independent units of management will be too great and the number of units of the hired factors will be too small. In the cases in which the unrestricted movement of the factors of production will not in itself remove all monopolistic conditions, state measures designed to shift management from the more to the less monopolistic industries should no longer appear paradoxical.

In the next two chapters we shall discuss possible ways of removing the disadvantages which are due to monopolistic conditions; but it is worth while pointing out here one way in which (so long as there was no rational buyers' preference) it could be ensured that there were the correct number of firms in each industry. We have seen that, if the hired factors of production are, in every firm, paid rewards equal to the value of their marginal products, the management will also receive a reward equal to the value of its marginal product. If, therefore, some method of control were devised to ensure that all *hired* factors of production were offered rewards equal to the value of their marginal products, management also would receive the value of its marginal product. In consequence, if there were no rational buyers' preference and if all factors were free to move in search of the highest rewards,

management would automatically go into the industries where it was most needed and the number of firms in each industry would be the optimum.

But these arguments unfortunately do not apply when buyers' preference is rational. Where rational buyers' preference exists, the products of the different firms in the industry must differ in some real way. In other words, when there is no rational buyers' preference, we may say that each firm is producing identically the same commodity, but where there is rational buyers' preference, each firm is producing a different commodity. If one among many firms producing identically the same commodity stopped production, the total loss to the consumers could be measured by the marginal utility of the money spent by the consumers on the product of that firm. But if there is only one firm producing a single commodity and this firm ceased production, the total loss to consumers is greater than the marginal utility of the money spent on the commodity.

This can be made clear by an example. Suppose that there are 100 consumers each consuming 100 loaves of bread at 1*d.* a loaf. Then the total output of bread will be 10,000 loaves selling at 1*d.* each. If these loaves are produced by 100 independent firms and one firm ceased production, each consumer would have only 99 instead of 100 loaves. Each consumer will lose a pennyworth of satisfaction by having only 99 instead of 100 loaves, and the total loss to consumers can therefore be measured by the marginal utility of the 100*d.* which was being spent on the output of the firm which has now ceased production. But if all the 10,000 loaves were produced by a single firm which ceased production, the total loss to consumers, who would now have no bread at all and so might starve, would be very much greater than 100 times the loss caused by the disappearance of one hundredth part of the total output. The amount of money spent on the total output of a commodity does not measure the total loss in which consumers would be involved if that commodity were not produced at all, although the price of a commodity does

measure the loss in which consumers would be involved if one less unit were produced.

In order to deal with our present problem we must know how to estimate the loss to consumers by being deprived of the *whole* of the supply of one commodity. We can do this by means of Table 4 on Chart I at the end of the book. In this Table column A shows the total output of a commodity demanded by consumers, and column B shows the price which they will be willing to pay for every amount of the commodity which they consume. Naturally this price falls as they consume more. Column C shows the total amount spent by consumers on different amounts of the commodity, and the figures in column C are therefore obtained by multiplying together the corresponding figures in columns A and B. Column E shows the total amount which consumers would pay for each amount of the commodity shown in column A, if they were offered the choice between having that amount or none at all.

The figures in column E are calculated in the following way. We can see from column B that consumers will purchase 1 unit, if the price is £25. It follows immediately that consumers will give £25 for 1 unit rather than go without it, so that the corresponding figure in column E is also £25. Column B shows that when the price falls to £24 the consumers will buy 2 units instead of 1 unit. When the price is £24, consumers are perfectly free to buy 1 or 2 units of the commodity. The fact that they buy 2 instead of 1 means, as we have already argued in Chapter I of this Part, that to have a second adds an amount to their satisfaction which is worth £24. But since to have 1 rather than none added £25 worth of satisfaction, while to have 2 instead of 1 added £24 worth of satisfaction, clearly to have 2 instead of none adds £49 (or £25+£24) pounds worth of satisfaction. The consumers would pay anything up to £49 in order to have 2 rather than none. Similarly, column B shows that when the price falls to £23, the consumers, who are free to buy as much as they like at this price, buy 3 instead of 2 units. To have a 3rd

must therefore add £23 to their satisfaction. But since, as we have seen, they would pay anything up to £49 to have 2 units instead of none, they would pay anything up to £72 (or £49+£23) to have 3 instead of none, since a 3rd unit adds £23 worth to their satisfaction. Thus £72 is entered in column E against the 3rd unit of consumption. Each figure in column E is obtained by adding the corresponding figure in column B to the previous figure in column E. The price of a commodity measures its marginal utility to consumers, i.e. the amount which is added to the consumers' satisfaction by having one more unit of the commodity, so that the total value of any amount of a commodity to consumers is obtained by adding the price at which they will purchase the last additional unit to the total value of the previous number of units purchased.

We can now see the difference between the value of the marginal product of management in an industry in which there are many firms producing identical commodities, and the value of the marginal product of management in an industry in which there is rational buyers' preference for the product of different firms, so that each firm is, in fact, producing a different commodity. In both cases the value of the marginal product of management is the net loss to consumers due to the closing down of the single firm and the concentration of the hired factors on the remaining firms. In both cases it can therefore be measured by the total value to consumers of the output of the single firm minus the price offered by consumers for the marginal product of the hired factors in the existing firms to which they are transferred. But in the case of an industry in which there are a large number of firms producing identically the same commodity, the output of a single firm represents only a small part of the total output of the commodity, and the price paid for the output of this firm can be taken to measure the total value to consumers of the firm's output. But in the case of a single firm producing the whole output of a single commodity, the total amount spent on the firm's output is less than the

total value of that output to the consumers. For on the principle outlined in the previous paragraph consumers would be willing to pay a larger amount than they do for the whole output of a commodity rather than go without it altogether.

If it could be arranged that all hired factors were paid rewards equal to the value of their marginal products, the actual rewards received by the management of firms, in industries in which there were a large number of firms producing the same commodity, would be a true measure of the value of the marginal product of management. In these circumstances management should move to the industries in which it received most. But if the question arises whether a single firm should be set up to produce a new commodity, or whether a single firm which is producing the whole output of a particular commodity should be closed down,—and this case includes the setting up or closing down of one firm in an industry in which there is rational buyers' preference—the principles involved are different. If all hired factors are paid rewards equal to the value of their marginal products in other occupations, the management of a single firm producing the whole output of a commodity will receive something less than the value of its marginal product. For the value of its marginal product is equal to what consumers would be willing to pay for the firm's output, rather than have none of the commodity, minus the amount paid to the hired factors; and this is greater than what is spent on the product minus the amount paid to the hired factors. A new firm should therefore be set up to produce a new commodity, if the value of the marginal product of management reckoned in this way is greater than the value of the marginal product of management in other industries.

If it could be assured that the hired factors of production were paid rewards equal to the value of their marginal products, the movement of every factor of production, including the factor management, to those occupations in which it was earning the highest reward, would bring about the most

desirable distribution of resources among the different *existing* occupations, but would not serve to show whether a new commodity should be produced or whether an existing commodity should in future not be produced at all. The ordinary pricing principles, which we examined in Chapters I and II of this Part, will serve to determine how much of each commodity should be produced, if any at all is produced, but will not serve to show whether a particular commodity should be produced or not.

We may, however, make certain statements about this decision. A new commodity should always be produced if there is any output of that commodity for which the total expenditure on the commodity would cover its costs of production. For, as we already have shown, the total value to consumers of the output of a new commodity is always greater than the total amount spent on it. Consequently, if the total amount spent on it is sufficient to cover its costs, the total value of the commodity to consumers will be more than sufficient to cover its costs. But even if there is no output of the commodity for which consumers would offer a price sufficient to cover its cost of production, it may nevertheless be desirable to produce the commodity. This is illustrated by a comparison of Tables 1 and 4 on Chart I at the end of the book. Let us suppose Table 1 represents the conditions of production of a new commodity by a single firm, and that column B of Table 4 shows the price which consumers will pay for the corresponding outputs of the firm. By comparing column B of Table 1 with column B of Table 4 we can see that for every output the average cost of production is higher than the price which consumers will pay for the product. But by comparing column C of Table 1 with column E of Table 4 we can see that for all outputs between 6 and 11 units the total value to consumers of the commodity is greater than the total costs incurred in its production. The commodity should, therefore, be produced.

Thus monopolistic conditions may involve waste, because the output of an industry may not be concentrated on the

correct number of firms, and because the pricing system alone will not suffice to show whether or not a single new firm should be set up to produce a new commodity or a new brand of an old commodity.

We have shown that the existence of monopolistic conditions may modify all the three fundamental advantages of perfect competition mentioned in Chapter II of this Part. It will be clear from this discussion that a large number of the so-called wastes of competition are more properly to be called 'wastes of monopolistic conditions'; and it may be of use to enumerate a number of particular ways in which these wastes may show themselves.

(a) One waste of competition, which is only possible if irrational buyers' preference leads to the absence of perfectly competitive conditions, is expenditure on competitive advertisement. If in any industry no firm produced an appreciable proportion of the total output of a product, and if this product were standardized and sold in a perfect market, no firm would spend money on advertisement. It would be sheer waste to do so, as in these conditions each firm can extend its market by an inconsiderable reduction in the price of its product. But where the market for a firm's product is imperfect, so that in order to sell more it must lower its price considerably to attract custom from its rivals, it may be better for it to sell more not by lowering its price but by spending considerable sums on persuading its customers that its product is better than that of its rivals. If all preferences were rational and so based solely on real differences in price and quality, firms would attract custom by cutting prices or improving quality. But if irrational buyers' preferences exist, each of two firms, selling almost the same product, may spend large sums on advertisement, and the advertisement of each firm may just offset the effect of the advertisement of the other. Yet it may pay neither of them alone to stop advertising.

Such expenditure is clearly a waste from the community's point of view; labour, capital, and other economic resources

are utilized for a purely competitive battle, which has no social use at all. If real differences in the product of different firms exist, advertisement will serve a useful purpose if it is used simply to point out the real advantages and disadvantages of different products and so to lessen irrational buyers' preference. But, even in this case, the advertisement will only be worth while if the extra satisfaction obtained as a result of the additional knowledge on the part of consumers is greater than the satisfaction obtainable from the goods which might otherwise be produced by the factors of productions used in the preparation and organization of the advertisement. In the real world a large part of expenditure on advertisement is undertaken simply to attract purchasers from one firm to another or from one product to another, without in fact giving consumers any greater knowledge of the ways in which particular goods will satisfy their needs. And all such expenditure on advertisement is a waste, due to monopolistic conditions in the sale of commodities.

(b) A similar waste which is due to irrational buyers' preference is expenditure on cross-transport. A firm in the north may be selling to customers in the south, while a firm in the south is selling an equally satisfying product to customers in the north. If competition were perfect, the firm in the north could sell at a better price in the north, since it would have to bear smaller transport costs on goods sold there than on goods sold in the south. But if the firm in the north had to lower its price or to spend money on advertisement to attract the northern consumers from the southern firm, it might find it more profitable to bear the transport costs rather than to change its market.

Such a waste due to unnecessary transport can be exemplified in the distribution of milk in a city. If each milk cart delivered to one or two streets instead of each cart to one or two houses in each street, the delivery of milk could be undertaken at a smaller cost. And *perfect* competition would bring this about, since each seller of milk would concentrate on one or two streets and drive out his competitors by incon-

siderable reductions in the price at which he offered milk to persons in the particular district. But, in fact, an individual dairyman will not find it profitable to concentrate on a particular district, for, in order to obtain all the custom in one street, he would have to reduce his prices very considerably below his rival's to obtain his rival's custom.

(c) The failure of each firm in one industry to specialize on a line of product to which it is most suited is another waste due to the imperfections of competition. Here again if there were perfect competition so that each individual firm could sell as much as it liked of a particular type of the product without causing the price to fall, competition would automatically bring about this specialization. For each firm would in these circumstances concentrate on one type and quality of product, if there were any real economies to be achieved by such action. But if each firm has to spend money on advertisement or to offer considerably lower prices to attract customers, each firm may find that it pays it better to produce a varied assortment of types and qualities to sell to its own particular customers rather than to face the cost of attracting a larger number of customers for one type of product alone.

In this case as well there is only a certain waste if the failure to specialize is due to irrational buyers' preference. If there is a rational buyers' preference for the goods of each particular firm, the concentration of the output of one line of the commodity on each firm will mean that certain firms stop producing particular lines of the product. This is equivalent to disappearance of certain distinct commodities, and the loss involved to the consumers by this must be reckoned on the principles discussed above in this chapter (pp. 160–3).

(d) Finally we may point out two particular ways in which an industry may fail automatically to concentrate the output on a small enough number of firms. In both these instances the distinction between rational and irrational buyers' preference is all-important in order to judge on the principles

outlined above (pp. 160–3) how far any concentration should go. First, in conditions of imperfect competition the efficient firms which can produce at lower costs may fail to drive out the inefficient firms. Perfect competition would bring this about, since each efficient firm would produce and sell more so long as its marginal cost was below the demand price of the product; and as all the efficient firms produced more, the total output of the commodity would grow and the demand price would fall, so that any inefficient firms, whose lowest average cost could no longer be covered by the demand price, would be driven out of business. But if there were not perfectly competitive conditions, and if the efficient firms had to spend considerable sums on advertisement or had to reduce their prices considerably to attract the customers of the inefficient firms, they might well prefer not to drive out the inefficient firms, even if the prices charged by the inefficient firms were well above the marginal costs of the efficient firms.

Secondly, monopolistic conditions may prevent that standardization of commodities which is desirable for the most efficient methods of production. A large number of firms might be producing different types of cars, each producing a small output at a high cost. If only a few designs were produced, and each were produced in one firm on a large scale, the cost might be very much reduced through the economies of large-scale production. Yet there is no assurance that imperfect competition will bring about this standardization and concentration of output. No individual producer might have any incentive to start to expand his output and to produce a single design on a larger scale, since the cost of invading his rival's markets might outweigh any reduction in his average cost which he could hope to obtain by the expansion in his output.

VII

THE CONTROL OF MONOPOLY

IN this chapter we shall discuss the different measures, by which the state may control industry in order to remove the disadvantages of monopolistic conditions. These measures fall into five groups:

1. **Anti-Combination Laws** designed to prevent the formation of monopolies among sellers or buyers;
2. **Educational Measures** designed to remove irrational buyers' preference on the part of consumers or to remove the lack of mobility of factors of production, in so far as this is due to ignorance;
3. **Rationalization,** which aims at concentrating the output of any industry in the hands of a single but private control;
4. **Taxes and Subsidies** used to control the output of different industries; and
5. **Price Control** which aims at removing the monopolistic power of influencing prices.

1. The possibility of removing monopolistic conditions by legislation[1] making the formation of combinations illegal is limited in the modern world. A monopolist may be able to restrict supply and so to hold the price of his product above the cost, because he controls the whole or a large proportion of the total supply of some natural resource. In this case a legal regulation, which effectively prevents all the owners of oil, for example, from forming an agreement to hold the price of oil above its cost, may be useful in preserving the fundamental advantages of competition. Legal regulation

[1] Actual legislation in the modern world is more often designed for precisely the opposite purpose of creating monopolies (e.g.) by limiting through licences the number of motor-omnibus companies that may operate in any district. Although, as we shall argue below (pp. 174 and 175), such legislation may be justifiable in special circumstances and with special safeguards, there is a dangerous tendency for modern industrial legislation to increase rather than to diminish the power of monopolies.

may be useful also in preserving the free movement of factors of production from one occupation to another. A trade union or professional body may be able to restrict free entry into the trade or profession by charging unnecessarily high entrance fees or by limiting the number of apprentices. Those who are already in the trade may be the only people able to train newcomers to it; or a professional body may misuse legal powers, which have been entrusted to it to maintain the standards of the profession. Legal regulations preventing the restriction of entry into any occupation on any ground other than lack of the necessary professional qualifications may effectively increase the ease with which labour can move from lower paid to higher paid occupations.

But there are many causes of monopoly which such Anti-Combination Laws cannot remove in the modern world. Nothing useful can be done by this method to prevent monopolistic conditions in an industry in which there are important economies of large-scale production. Anti-Combination Laws cannot ensure that there will be a large number of independent railways competing between Oxford and London, or that motor-cars will be produced by a large number of small independent firms. Or if legal regulations could bring this about, they would clearly be wasteful. Such measures cannot cure the imperfection of the market for the sale of a product, which is due to transport costs or to buyers' preference, whether rational or irrational. Nor can they ensure perfect competition in the purchase of factors of production, since they do nothing to remove either the cost of movement for labour or the ignorance of the factors as to the occupations in which they can obtain the highest rewards. In spite of such measures the most important reasons for monopolistic conditions will still remain.

2. Educational Measures are of greater significance in the modern world. Such measures are of two kinds; they may give consumers fuller knowledge of the real qualities of the goods which they purchase, or they may give to the owners of factors of production, and in particular to labour, fuller

knowledge of the rewards offered for employment in different occupations and of the cost and methods of training for and of moving into other occupations. We may deal with these two objects separately.

If consumers' associations or a public consumers' board could test scientifically the qualities of different products and could instruct consumers in the advantages to be derived from different amounts of different commodities, irrational buyers' preference would be diminished. If a trustworthy and authoritative body were enabled to spend on consumers' research one tenth of the sums now spent on wasteful competitive advertisement, a large amount of buyers' preference would disappear. In consequence, wasteful competitive advertisement would diminish and producers would be forced to concentrate on real quality rather than on high-pressure salesmanship; cross-transport charges would diminish, in as far as they were wasteful; the concentration of output on a smaller number of more efficient firms would take place; and competition would become more nearly perfect in the case of many products, so that the price paid for the factors of production would approach more closely to the value of their marginal products.

But many reasons for monopolistic conditions in the sale of commodities cannot be touched by consumers' education. In industries in which there is room for only one or a few firms of the optimum size, consumers' education will not remove the power of each firm to influence the price of its product by varying its sales. In this case the monopolistic condition is due to the fact that the number of sellers is small, and not to the existence of buyers' preference. In many cases in which there is a large number of independent firms producing a commodity, each firm has a semi-independent market for its product based on *rational* buyers' preference due (e.g.) to transport costs or to real differences in quality of the products; and in these cases consumers' education will not remove the fact that each firm by selling more or less can appreciably affect the price of its own product.

Educational Measures include also measures designed to lessen monopolistic conditions in the purchase of factors of production. A single producer may be able to depress the price of a factor which he is purchasing, either because the number of purchasers is small or else because the factor purchased does not move readily from the purchaser offering a lower to a purchaser offering a higher price. In as far as there is no alternative use for a factor (e.g. a raw material) except in one industry and in as far as the producers in that industry are small in number, no amount of information given to the owners of the raw material will remove the power, possessed by each purchaser of that raw material, of depressing its price by buying less of it.

But producers may have some power of control over the price of a factor which they purchase, not because they are few in number but because a certain amount of this factor is closely attached to each individual producer and does not move immediately to other producers, who are offering a higher price. This lack of mobility of the factor of production may, however, be 'rational' or 'irrational'. It is rational if it is based on real costs of movement. If it is costly for a worker to move from one firm to another because employment in the second firm involves costlier travel to and from his work each day, or because he must move his home to another district or learn a new skill, he will have a rational cause for not moving, unless the wage offered by his present employer falls so far below the wage offered by the alternative employer that the difference in wage more than covers the cost of movement. These rational costs of movement cannot be removed by any educational measures.

But labour may fail to move, because it is ignorant of the wages offered elsewhere or of the chances of employment in other occupations, or because it overestimates the cost of movement or the cost of learning a new skill, or because it is ignorant of the cheapest methods of moving or of learning a different skill, or because it cannot raise the sum necessary for the move at the current rate of interest. The owners of capital

and land from ignorance of the yield of capital and land in different occupations may fail to move these factors to the occupations in which the yield is highest. Sellers of raw materials from ignorance of the prices offered for the material by different producers in different industries or in different districts may fail to desert a purchaser offering a lower price for a purchaser offering more. If the ignorance of the owners of factors of production could be removed, there would be a considerable diminution in the control of individual purchasers over the price of the factors which they purchase.

Different Educational Measures will be proper in the case of different factors. A more complete use of existing state Employment Exchanges for the purpose of giving information about jobs offered in different districts, firms, and occupations and about the rates of pay offered; the provision either through Employment Exchanges or other bodies of information about the cost and methods of learning different skills; an extension of the guidance given by public bodies to juveniles entering industry of the prospects in each industry; the provision through public bodies of training courses at the lowest possible cost; the provision through public agencies of information about the cost of movement from district to district and about the cost of living in different districts; the loan of money by some public body to workers, at the current rate of interest and with appropriate sinking funds for the repayment of the capital sum, to finance the cost of movement—all these are appropriate measures to take in the case of labour.[1]

In the case of capital much is already done by the owners of capital themselves through the organization of the stock exchanges and the advice which stockbrokers can give of the yields in different industries and firms. But in the case of newly floated companies which are issuing shares and

[1] If by such measures the labour market is better organized, there will be a diminution in that type of unemployment to which reference was made in Part I, Chapter VIII (p. 77), and which is due to the fact that some labour is always in the process of moving from one job to another.

borrowing for the first time, the owner of capital is often left in great ignorance about the probable profitability of the new enterprise. The organization by the state or by the stock exchange of a body which could call on technical experts in different fields to give authoritative and fair judgement about the actual prospects of a new company might be of considerable assistance. The organization of the markets in which raw materials are bought and sold already provides considerable knowledge to the buyers and sellers. But any increased publicity of the actual prices paid by different purchasers would be of considerable help, and the state might give legal power to certain bodies to obtain and publish the prices at which purchases of different raw materials were taking place by different firms in different districts and in different industries.

3. We must turn now to Rationalization as a method of removing some of the disadvantages of imperfect competition. By rationalization is meant action taken by the state or by the majority of producers in a particular industry to bring that industry under a single control. Such action will remove many of the wastes, which are due to irrational buyers' preferences between the products of the different firms in an industry. If an industry is brought under a single control, wasteful competitive advertisement between the individual firms will be directly eliminated; and it will pay the single ownership to concentrate production on the more efficient plants, to reduce the number of plants until each remaining plant is working at capacity, to specialize each productive unit on a single line of product, and to eliminate any existing cross-transport charges.

Rationalization will therefore eliminate directly many of the so-called wastes of competition, which could be eliminated indirectly by the removal of consumers' ignorance and inertia; and in many cases rationalization is a better way of removing these wastes than the education of consumers. For such education of consumers could never be complete, and it could only remove irrational buyers' preference at consider-

able cost. But rationalization will remove these particular wastes without any cost and will remove them completely. This is not, however, to argue that expenditure on the provision of authoritative information to consumers is not desirable, since consumers will always have to choose between the products of different industries, whether these industries are rationalized or not. If there is irrational buyers' preference in the choice between articles produced by different rationalized industries, these industries may embark on wasteful competitive advertisement aimed at attracting custom from the one industry to the other.

But it is equally clear that rationalization alone is not a sufficient cure for the evils of monopolistic conditions. For rationalization is based upon bringing the control of an industry under a single private direction, and this will obviously increase the monopolistic power of the industry over the price charged for its product and over the price paid for its factors of production. We may conclude that while the breaking down of obvious artificial barriers to competition, the education of consumers and of factors of production, and the rationalization of industries in which irrational buyers' preference plays an important part, will together remove many wastes due to monopolistic conditions, yet these measures cannot remove the monopolistic influence over prices, which will be exercised in industries in which the number of competing producers is necessarily small. Rationalization will clearly increase such monopolistic control over prices. We must turn to measures which will remove the disadvantages of monopoly in those cases in which there is not room for a large number of independent producers.

4. The use of Taxes and Subsidies by a public body is theoretically a complete method of removing the wastes of monopoly. All the disadvantages of monopolistic conditions can be explained by saying that while consumers' needs would be best satisfied if a factor of production were shifted from one industry to another whenever the value of its marginal product in the second industry exceeded the value

of its marginal product in the first by an amount sufficient to cover the cost of movement, in monopolistic conditions this may not happen automatically. Theoretically any desired shift of the factors of production can be brought about by a system of taxes and subsidies. If, for example, it is desired to shift labour from one industry to another, a tax per worker employed may be imposed in the first industry in order to raise the cost of employing additional labour in that industry; and the proceeds of the tax may be used to pay a subsidy on each worker employed in the second industry in order to lower the cost of employing more men in that industry.

The rates of subsidies and taxes can be adjusted to shift a factor of production in any direction to any extent and yet in such a way that the tax always just covers the subsidy. Thus, suppose that there are three industries A, B, and C, and that it is desired to shift 60 units of labour from A, 40 from B, and 100 to C. A tax on labour employed in A and B used to pay a subsidy on labour employed in C is indicated. If such a tax and subsidy shifts only 80 units to C, but shifts 70 from A and 10 from B, the tax on labour employed in A must be lowered slightly and that on labour employed in B raised considerably so that a greater subsidy can be paid on labour employed in C. By adjustments of this kind, any desired shift in the employment of any factor can be achieved.

The best distribution of factors among different occupations will be achieved if factors are shifted from one to another occupation whenever the difference between the value of their marginal products in the two occupations is sufficient to cover the cost of movement. But this does not mean that the hired factors should always be shifted into those occupations in which, because of monopolistic conditions, they are paid less than the value of their marginal products. This would be true if the vast majority of industries were perfectly competitive, so that the hired factors in most industries are paid rewards equal to the value of their marginal products, while in one or two monopolistic occupations the hired factors are receiving less than the value of their marginal

products. In this case it would be desirable to shift the hired factors of production from the competitive industries into all of the monopolistic industries, in which the values of their marginal products were higher. But if most occupations were monopolistic, so that the values of the marginal products of the hired factors were greater than their rewards in the vast majority of industries, it would be impossible to expand all these industries at the same time; all that is desirable is that factors should shift from industries in which the values of their marginal products are lower than the average to industries in which the values of their marginal products are higher than the average. This implies taxing the employment of the hired factors in those industries in which there is more than the average degree of competition, in order to subsidize the employment of the hired factors in those industries in which there is less.

If by such a system of taxes and subsidies the factors of production are shifted from one occupation to another until the values of their marginal products are the same in every industry, the first two fundamental advantages of perfect competition mentioned in Chapter II of this Part will be achieved. For we have shown in that chapter that if the value of the marginal product of each factor is the same in every industry, commodities will be produced in those amounts which satisfy consumers' needs best, and also it will be impossible to produce more of any one commodity without producing less of another.

The third fundamental advantage of perfect competition is that the number of firms in each industry will be such that each firm is of the optimum size. Here again the control of monopolistic conditions by taxes and subsidies could theoretically achieve the desired result. For just as the hired factors of production can be shifted from one industry to another by this means, so a system of taxes and subsidies can be used to shift management from one industry to another, i.e. to decrease the number of firms in one industry and to increase it in another. We have already explained in

the last chapter (pp. 156–163) how the value of the marginal product of management in each occupation is to be measured and how by this means it can be decided whether the number of firms is too large or too small in any particular industry. For this purpose a fixed tax should be levied on each independent firm in any industry in which there are too many firms, and a fixed subsidy should be paid to each firm in the industries into which it is desired that management should move. It was argued in the last chapter (pp. 156–8) that if industry A was more competitive than the average, whereas industry B was less competitive than the average and if the lack of competition was not due to rational buyers' preference, the hired factors of production should be shifted from industry A to industry B while management should be moved from industry B to industry A. In these conditions a tax levied per unit of the hired factors employed in A, and used to pay a subsidy fixed in amount to each firm in industry A, together with a tax fixed in amount on each firm in B used to pay a subsidy per unit of the hired factors employed in B, will bring about the desired distribution of resources.

In a similar manner taxes and subsidies may theoretically be used to eliminate the wastes of competition enumerated on pp. 165–8 above. Wasteful competitive advertisement can be made unprofitable by the imposition of a heavy tax on such advertisement. Cross-transport charges can similarly be eliminated by a tax on wasteful transport. If because of irrational buyers' preference firms fail to specialize in particular lines of product where such specialization would bring real technical economies, a tax might be devised to rectify their wasteful practices. Finally, the reader is reminded that it was argued in Chapter III of this Part (pp. 123–5) that those wastes which are compatible with perfect competition can also be removed by a judicious use of taxes and subsidies, designed to make the marginal cost of producing anything to the individual producer the same as the marginal cost of the production to the community.

But this method of taxes and subsidies, which is theoreti-

cally so complete, has one obvious defect in operation—the difficulty which the public body administering these taxes and subsidies would have in estimating the value of the marginal product of factors in different uses, in order to shift each factor of production into that occupation in which the value of its marginal product is highest. It is important to realize exactly what this difficulty involves. The estimation of the marginal product of any factor in any occupation is a technical matter, which is dependent upon the correct judgement of those operating the firm in question. Business men will always be asking themselves and their technicians the question: 'How much should I increase my product if I employed more labour or if I installed another machine of a given type or used more of this raw material?' and they are, of course, liable to make mistakes in such matters. But no public authority can discover what is the business man's estimate of these 'marginal productivities' simply by inspection of what the business man does. Even if the price paid for each factor of production and the prices of all products are known, the public authority cannot decide whether the business man decides not to take on another unit of labour because he thinks that its marginal product is small, or because he judges that the price of his product would fall too much if he put this extra output on the market, or because he wishes to avoid increasing his demand for labour and so raising the wage-rate. Technical knowledge alone can give an approximate estimate of the marginal productivity of different factors; and since the payment of a tax or receipt of a subsidy depends upon its decision, the public authority cannot expect the business man to provide it with accurate estimates. The public authority must either guess, or have technical experts of its own familiar with each industry, who must be continually revising their estimates of the marginal productivities of different factors; for, it must be remembered, continual technical changes are likely to take place. To guess will be unsatisfactory, while to duplicate in many industries the technical staff, one half of which is working for the owners

and another half for a public authority, involves considerable waste and is unlikely to lead to an easy and harmonious management of the concern. In brief, if a public authority were in a position to adjust the necessary taxes and subsidies satisfactorily it would, in fact, be in a position to manage the industries itself, and direct socialization, which we shall discuss in the next chapter, would be the obvious solution.

5. The Control of Prices by a public body is another method of control over monopolistic conditions, which may theoretically bring about the desired redistribution of resources among the different occupations. We have seen that the wastes due to monopolistic conditions are all due to the fact that individual producers may have the power of raising the price of the commodity sold by selling less of it or the power of depressing the price of hired factors by hiring less of them. This power can theoretically be removed if maximum commodity prices and minimum factor prices are fixed by a public authority. We shall discuss the fixing of maximum commodity prices and the fixing of minimum factor prices separately.

We have argued that the resources at the disposal of the community will be most effectively used if the value of the marginal product of each factor is the same in every occupation. If, therefore, by means of price control the value of the marginal product of each factor could be made equal to its reward in every occupation, and if factors were left free to move in search of the highest rewards, the value of the marginal product of each factor would tend to be the same in each occupation. In those cases in which an individual producer can raise the price of his product by selling less, he will not employ factors such as labour up to the point at which the price of labour is equal to the value of its marginal product; he will employ less labour than this, because he can raise the price of his product by producing and selling less. But if a maximum price for his product were fixed by law, this would remove his power of raising prices by restricting his output and if the legal price were properly chosen, he could be made to employ labour up to

the point at which the value of its marginal product was equal to the wage-rate.

This point is illustrated by a comparison between Tables 6 (*b*) and 8 on Chart II at the end of the book; Table 6 (*b*) illustrates the position of a producer who is selling his product in monopolistic conditions, and Table 8 shows the effect of a legal maximum price for the product. Columns B and C of Table 6 (*b*)[1] show the technical possibilities of production by a certain producer, while column D shows the conditions of his selling market, i.e. the price at which he can sell the corresponding output of column B; if he can employ labour at a wage-rate of £3, he will give employment to 21 men, since column G shows that up to this point he would add more to his receipts than to his costs by employing another man. But it is clear from column E of Table 6 (*b*) that he should employ 30 men, if the wage-rate of £3 is to be equated to the value of the marginal product of labour. Column D shows that for the output of 30 men, which is the volume of employment which he should give, consumers will pay a price of 2*s*. Suppose then that some public body fixes a maximum legal price of 2*s*. for this product; then the conditions in which the producer can sell are represented in Table 8 instead of Table 6 (*b*). Even if he employs less than 30 men and produces so small an output that consumers would be willing to offer more than 2*s*. a unit for it, he will, nevertheless, be unable to charge more than 2*s*. If, however, he employed 31 men and produced a larger output than consumers are willing to purchase at 2*s*. the maximum legal price will become ineffective so that the price he could charge would fall as before to 1*s*. 11*d*. By comparing columns E and G of Table 8 it can be seen that so long as the legal maximum price is operative the conditions for the producer are made to resemble those of perfect competition (shown in Table 6 (*a*)), where he has no control over price and where the value of the marginal product of labour in column E is equal to the

[1] The figures in this Table have been explained at length in Chapter IV of this Part (pp. 137–9).

marginal value of labour shown in column G. In the conditions shown in Table 8 it will pay him to employ 30 men at a wage-rate of £3, since up to this point he can add more than £3 to his receipts by employing another man.

We can also illustrate this argument by comparing a firm's marginal cost with its marginal receipts, and by studying the effect of price control. This is done by a comparison of Tables 1, 2 (*b*), and 3 on Chart I at the end of the book, Table 1 representing a firm's costs, Table 2 (*b*) representing monopolistic conditions of sale for this firm's output, and Table 3 showing the difference made to these market conditions by the fixation of a maximum legal price for this firm's product.

It can be seen from a comparison of Tables 1 and 2 (*b*) that in the absence of a legal maximum price the firm will produce 7 units of output, since up to this point its marginal cost is lower than its marginal receipts. But it should produce 10 units of output which it can sell at a price of £20, if it is to produce more, so long as its marginal cost is less than the price of the product, i.e. so long as the rewards of the factors are less than the value of their marginal products. Table 3 represents the effect of fixing a maximum legal price of £20 for the product of this firm. The effect of such price regulation is to make the marginal receipts of the firm equal to this regulated price of £20 for every output for which this maximum price is effective, i.e. for every output for which consumers would be willing to pay a price of £20 or more. We know, however, from Table 2 (*b*) that, if the firm produced more than 10 units of output, consumers would not be willing to pay a price of £20, so that the price control would become ineffective; and therefore for all outputs greater than 10 the conditions of Table 2 (*b*) are reproduced in Table 3. By comparing Table 1 with Table 3 it can be seen that with the maximum legal price fixed at £20 the firm would produce the desired output of 10 units, since up to this point its marginal costs would be lower than its marginal receipts.

There is an important difficulty connected with this method of control of monopoly. In the case of industries in

which the optimum size of a single plant is so large in relation to the total demand, that a single plant cannot be run at its full capacity, it will not be possible simply by fixing a maximum legal price to make the price of the product equal to the marginal cost of production. For so long as the average cost of production could be lowered by operating the plant more fully, the marginal cost will be lower than the average cost of production. In these circumstances if the firm is not allowed to charge a price higher than its marginal cost of production, the price will be below the average cost of production and the firm will be unable to cover its costs, so that sooner or later it would close down entirely. This difficulty is illustrated by the comparison of Table 1 with Tables 4 and 5 on Chart I. Table 1 again illustrates the cost conditions in a single firm, while Table 4 takes the place of Table 2 (*b*) to illustrate the market conditions for the sale of the firm's product. The important difference between the figures chosen in Tables 2 (*b*) and 4 must be explained. In Table 2 (*b*) it was supposed that the desired output of 10 units was one at which the average cost of production was covered by the price offered for the firm's product. If, however, Table 1 is compared with Table 4 it will be seen that the firm should produce 9 units of output, because up to this point its marginal cost is less than the price offered for its product. But if it produces 9 units of output, it will not be able to cover its costs, since Table 4 shows that the price offered for 9 units is only £17, whereas Table 1 shows that the average cost of producing 9 units is £20 5*s*. And yet if in other occupations prices are equal to marginal costs, then in this occupation more should be produced as long as the marginal cost is lower than the price of the product; for only if this is done will the factors of production be distributed in the best way between this and other occupations.

We have already shown in the last chapter (p. 164) that a comparison of column E of Table 4 with column C of Table 1 proves that this commodity should be produced. If the plant in this industry is to be used at all, it should be

more fully utilized so long as the marginal cost is less than the price of the product, so that 9 units should be sold at £17. Table 5 illustrates the effect of fixing a maximum legal price of £17, which is the price at which the output of 9 units could be sold. So long as less than 9 units are sold, the legal price control is effective with the result that the figures in columns B and D of Table 5 are both equal to £17; for by selling one more unit the firm will add £17 to its receipts so long as the price is fixed at £17. But for outputs greater than 9 the legal maximum price becomes ineffective, so that the figures in columns B and D of Table 5 become the same as the corresponding figures in Table 4. If Tables 1 and 5 are compared it can be seen that if the firm produces anything at all, it will produce 9 units when the legal maximum price of £17 is fixed, since for outputs of 6, 7, or 8 units its marginal cost will be below its marginal receipts. But Tables 1 and 5 show that when it is producing 9 units, its average cost is greater than the price obtained for its product, with the result that its total costs (£182 5*s*.) exceed its total receipts (£153) by £29 5*s*. It would not pay the firm to produce anything unless this loss were made up by a subsidy. But the combination of a legal maximum price of £17 together with the payment of a fixed subsidy to the firm of not less than £29 5*s*. will enable it to cover its costs and give it the incentive to produce 9 units of output. A maximum price fixed by law, and so chosen that for the amount bought at that price the marginal cost of production is equal to that price, will make a producer produce up to the point at which his marginal cost is equal to the price of his product. But in the case of any industry in which the total demand is small relative to the optimum output of a single efficient plant, the marginal cost will be below the average cost, and in this case price control must be accompanied by a fixed subsidy which will enable the firm to cover its total costs.

In an analogous way the power which monopolists may exercise over the prices which they pay for the hired factors of production may be removed by the fixation of legal

minimum prices for these factors. The fixing of a minimum wage for labour will make it impossible for an employer to lower the wage-rate by employing less labour, and so long as the fixed minimum wage is effective will mean that by taking on one more or one less labourer the employer will increase or decrease his wage-costs by no more than the wage-rate of labour. In other words, such a fixed minimum wage will make the conditions for the purchase of labour correspond to those of perfect competition. This point is illustrated by a comparison between Tables 7 (*b*) and 9 on Chart II at the end of the book. Table 7 (*b*) illustrates monopolistic conditions in the hire of labour, and Table 9 illustrates the same conditions when a minimum wage of £3 is fixed. In Table 7 (*b*) the wage-rate which must be paid by the employer to attract 30 units of labour is £3. Let us suppose that until 30 units of labour are employed, the value of the marginal product of labour is greater than £3, so that 30 units of labour should be employed. It is clear from Table 7 (*b*) that if there is no control of the wage-rate less than 30 men will be employed, since by employing 29 instead of 30 men the wage-bill will be reduced by £8 16*s*. and not simply by £3. But if a minimum wage-rate is fixed at £3, the conditions of the labour market become those shown in Table 9. The minimum legal wage-rate is effective for all volumes of employment less than 30, since a wage less than £3 would be sufficient to attract any volume of employment less than 30: but for volumes of employment greater than 30 the legal minimum wage-rate becomes ineffective, since a wage-rate higher than £3 must be paid to attract more than 30 labourers. In consequence, for all volumes of employment up to 30, the conditions are now similar to those of perfect competition (shown in Table 7 (*a*)); while for volumes of employment above 30 the conditions remain monopolistic as before. But with this fixed minimum wage-rate the employer will no longer have any incentive to employ less than 30 men simply in order to reduce his costs by reducing the wage-rate.

We conclude that if a maximum price for the product is

fixed at the figure which would be the demand price if the article were produced up to the point at which its marginal cost were equal to its price, and if minimum prices for the factors of production are fixed at the figures which would have to be paid if the factors were employed up to the point at which their rewards were equal to the value of their marginal products, the results of perfect competition can be reproduced. No producer will have any incentive to reduce output in an attempt to raise the price of his product or to reduce the rewards paid to the hired factors. In these circumstances each factor would be paid a reward equal to the value of its marginal product, and the factor would thus be distributed in the best way among the different possible occupations. In the case of commodities for which the demand was so small that a single plant could not operate at its fullest capacity, this price regulation would have to be accompanied by the payment of fixed subsidies to enable the total cost of production to be covered.

If this method of control over monopoly were chosen, appropriate price-fixing bodies would have to be established. In the case of wage-rates there are already many wage-fixing bodies. In many industries there are Trade Boards, and in agriculture Wage Boards, whose function is to fix minimum wage-rates. In other industries Trade Unions fix minimum wage-rates with the employers. Where monopolistic conditions exist in the hire of labour, such wage-fixing bodies diminish the incentive which employers may have to dismiss men simply in order to depress wage-rates. Such bodies are therefore fully justified in conditions which would in any case be monopolistic, and their action in fixing wage-rates makes the wage paid approximate more closely to the value of the marginal product of labour than it would otherwise do.[1]

[1] These are the conditions to which reference was made in the footnote at the end of Part I, Chapter IX. Where monopolistic conditions in the hire of labour exist, the fixing of a minimum wage-rate will remove the incentive to dismiss men simply in order to depress wage-rates, so that the same volume of employment will be given at a higher real wage-rate or more employment will be given at the same real wage-rate.

The difficulties of this method are similar to those already discussed in connexion with the control of monopoly by means of taxes and subsidies. Bodies which are fixing maximum commodity prices and minimum factor prices, in order to equate the rewards of factors with the value of their marginal products, must estimate the marginal productivities of different factors in different industries.

It is, however, relatively easy for price-fixing authorities to discover if the maximum commodity prices are too low or the minimum factor prices are too high. Suppose that the relevant authority has attempted to fix a maximum price for a commodity and minimum prices for the factors, which equate the prices of the factors to the value of their marginal products. If, however, the maximum legal price for the commodity has been in fact fixed below this proper level, there will be a twofold result; consumers will wish to purchase more than the proper amount of the product because its price is fixed too low, while at the same time the producers will wish to produce less than the proper amount of the product, because the lowering of the price by law has reduced the value of the marginal product of each factor below the price that must be paid for that factor. Consumers will at this price desire to purchase more than the producers are willing to produce. At the shops there will be a scarcity of goods at the ruling price, so that consumers will scramble or form queues and wait in the hope that they will be the lucky persons who will not have to go entirely without the commodity, for which at the ruling price the demand exceeds the supply. When, therefore, the price-fixing authorities observe these phenomena they will know that the price fixed is in fact too low. But if the maximum legal commodity price has in fact been fixed too high, there will be no such indications of its mistake to the price-fixing authority. For, if they have fixed too high a price, they will have taken away *some* of the monopolistic power from the producer—so long as the price fixed is lower than the price which would have been charged if there had been no control

—but they will not have fixed a price sufficiently low to cause the monopolist to extend his production up to the point at which its marginal cost is equal to its price. The output will be smaller and the price of the product higher than is necessary, but there will be no means by which the price-fixing authority can tell whether this is so except by actual measurement of the marginal products of the factors in order to assess the marginal cost of production.

Similarly, the authorities fixing minimum legal prices for factors of production will be able to judge fairly easily if these fixed prices are too high, but will have no simple criterion by which they can judge whether they are too low. Suppose, for example, that a minimum wage-rate has in fact been fixed at a level higher than that which will equate the value of the marginal product of labour to the wage-rate. In consequence of the excessively high wage-rate more than the proper amount of labour will be attracted to this occupation, but at the same time producers will employ less than the proper amount of labour, because the excessively high wage-rate has raised the price of labour above the value of its marginal product. The result will be unemployed labour in the industry, since all the labour seeking work in that occupation at the excessive wage will not be able to find employment at that wage. But if the legal minimum wage fixed is too low, employers will be left with *some* monopolistic power of depressing wage-rates by reducing their demand for labour below that amount, at which the wage-rate would be equal to the value of labour's marginal product. But the wage-regulating authority will have no means of judging whether the minimum price fixed for any factor of production is too low except by direct measurement of the marginal product of that factor.

There is one advantage of this method of price regulation over the method of taxes and subsidies. The method of taxes and subsidies cannot be used at all, unless the public authority which is adjusting these taxes and subsidies directly assesses the marginal productivities of the different factors

in different occupations. But by a process of trial and error use might be made of maximum legal selling prices for commodities and minimum legal buying prices for factors of production without assessing directly the marginal productivities of different factors in different occupations. If the price-fixing bodies lower the maximum commodity prices so long as there are no signs of an excess of consumers' demand over supply, and raise the minimum factor prices so long as there are no signs of unemployment, a close approximation to the correct regulation of prices might be found. At the same time it must always be assumed that in industries in which the plant could not be operated to capacity, sufficient fixed subsidies are paid to enable the plant to cover its total costs.

Even so the real difficulties of this method of control would be enormous if it was to be effective and complete. Theoretically a different legal maximum price would have to be fixed for every commodity and for every different type or quality of each commodity, in the sale of which there was any element of monopoly power; and all these prices would not only have to be subject to continual revision, as technical methods of production and consumers' tastes changed, but also would have to be effectively enforced by the responsible bodies. Similarly, for every factor and for every grade and type of a given factor, in the purchase of which any monopolistic element was present, a different legal minimum price would have to be fixed, revised, and enforced.

VIII

PUBLIC MANAGEMENT AND PLANNING OF INDUSTRY

IN the last chapter we saw that all the suggested methods of control of industry were open to criticism, either because they were incomplete or because they were impracticable. In this chapter we shall discuss the direct management of monopolistic industries by public bodies.

We have shown that the best distribution of the community's resources would be achieved if each factor were employed in every occupation up to the point at which the price of the factor was equal to the value of its marginal product. This problem would therefore be solved directly if those in control of different businesses attempted to equate the rewards of factors to the value of their marginal products rather than to maximize the profits of the business. This can be achieved if monopolistic industries are socialized, and operated directly with this end in view. This does not involve the socialization of any industry in which there is perfect competition, but only of industries in which there is an appreciable monopolistic element and so an appreciable discrepancy between the prices paid for the factors and the value of their marginal products. Nor does it involve public *ownership* of the capital of any industries but only public *control* or *management* of these industries. This policy could be carried out, if the capital of an industry was still in private ownership so that the private owners received any profit made by the industry, provided that the managers of the industry were not responsible to the owners in their decisions how much to produce, what prices to charge for the product, and what prices to offer to the different factors. Arguments for the public ownership of capital, so that the state may receive the income from interest and profit, rest on other grounds and are discussed in Chapter V of Part III.

If all industries in which there is an appreciable element of

is levied in duty regardless of the size of the total property, or of the individual bequest, which is left at death. They are progressive, if either of two principles of graduation are adopted. With the first principle of progression (which is adopted in the English Estate duty), the proportion of the property taken in duty increases with the size of the total property left at death. With the second principle of progression, the total property left at death would, for purposes of the duty, be divided into its component legacies and each legacy would be taxed at a rate dependent upon its size. If out of a total property of £10,000 one man is left £8,000, another £1,000, and two others £500 each, the £8,000 bequest would be taxed at a higher rate than the £1,000 bequest, which in turn would be taxed at a higher rate than either of the £500 bequests.

For the purpose of redistributing income more equally, progressive death duties have less advantages than a progressive income-tax. In as far as inequalities of income are due to the unequal ownership of income-bearing property such duties are as effective as an income-tax. Progressive death duties—especially those which are graduated on the second of the two principles mentioned in the previous paragraph—will take large amounts of property from those who inherit large properties and so obtain large incomes from property; and the revenue may be used to increase directly or indirectly the incomes of the poor. But while the income-tax will also diminish inequalities of income from work, death duties will not directly have this effect, since they cannot be levied on incomes from work. But indirectly they will diminish inequalities of earned income. For, as we have shown in Chapter II of this Part, inequalities of income from work are partly due to inequalities of opportunity to train for the higher paid occupations, so that an equalization of incomes from property would indirectly diminish inequalities of income from work. In a community in which the main inequalities are due to the unequal distribution of property, and in which many of the inequalities of income from work

are due to inequalities of opportunity, progressive death duties will be almost as effective as a progressive income-tax in reducing inequalities. And if, as will be shown in what follows, death duties have other marked advantages over an income-tax, they are to be preferred as the main instrument for promoting equality.

Death duties, if they are levied impartially on all forms of property at death, will, equally with an income-tax, have no adverse effects upon the distribution of economic resources among different occupations. Consumers will be free, through the prices offered for different commodities, to express their marginal preferences for different commodities; and since capital will be subjected to death duties in every form of occupation, the factors of production including capital will still flow into those industries in which their marginal products are of the greatest value to the consumers.

In their effect upon employment progressive death duties are to be preferred to a progressive income-tax. We have argued that the effect of taxation upon employment will depend first upon its effect on the incentive to spend money on capital development at the current rate of interest, and secondly, upon its effect on the proportion of income which will be saved. It was shown that a highly progressive income-tax would reduce the incentive to spend money on capital development. People will borrow money for this purpose only if they expect to earn on the new capital goods installed a profit in excess of the interest to be paid on the borrowed funds, and this margin of profit may be seriously reduced by a progressive income-tax. In the case of the death duties this margin would not be reduced at all. If a man can borrow £10,000 at 4 per cent., i.e. for £400 a year in interest, and expects to make a rate of profit of 5 per cent., i.e. a profit of £500, on the installation of a machine costing £10,000, he will add £100 to his net income by installing this machine. This action will not increase the property taxable at his death, since his debts must be set against his property to arrive at the net value of his taxable property. The incentive to spend

money on capital development at the current rate of interest will therefore be less affected by death duties than by an income-tax.

This result may appear paradoxical. But it should be clear, if it is realized that the incentives to spend money on capital development are quite different from the incentives to accumulate property. A man can accumulate property by spending less than his income; but, having accumulated property, he must make the independent decision whether to hold money, securities, or a machine. A man can decide to accumulate wealth without deciding to build a new machine; for he may decide simply to hold more money or securities. A man can decide to build a new machine without deciding to accumulate more property; for he can use some of his holding of money, or can sell securities for money, in order to purchase the new machine, without himself spending less than his income. The incentive to spend money on capital development at any given rate of interest should, as we have argued, be little affected by death duties.

But progressive death duties, just as a progressive income tax, will almost certainly cause a diminution in the proportion of the national income saved, if the proceeds of these taxes are used to increase the incomes of the poor. This will be so for two reasons. First this policy will diminish inequalities of income; and we have already argued that a transference of income from rich to poor causes a fall in the savings made out of that income, because the poor save a smaller proportion of their income than the rich. Secondly, if the death duties are progressive, any one who is saving will know that the larger the property which he accumulates, the greater will be the proportion taken at his death by the state and the smaller, therefore, the proportion which he can leave to his heirs. This may reduce the incentive to accumulate property for the benefit of his heirs.

It is, however, sometimes maintained that death duties will reduce the proportion of the national income, which is saved, to a greater extent than an equivalent income-tax,

because death duties are a tax on capital and the income-tax is a tax on income. This belief is not necessarily true. Suppose that a man is determined to leave a fixed amount of property for the benefit of his heirs. If he has to pay income-tax during his life he must restrict his expenditure on consumption in order to accumulate as much as before to leave to his heirs. If a duty will be levied on his property at death, then he must equally restrict his consumption during his life in order to accumulate a larger property than before, of which only a part will pass to his heirs. An income-tax, the revenue from which is used by the poor for expenditure on consumption, will reduce the proportion of the national income which is saved, in so far as the taxpayers in order to meet the tax do not reduce their expenditure on consumption but save less. A death duty, the revenue from which is spent on consumption, will reduce the proportion of the national income which is saved only in so far as those whose property will be taxed at death fail to restrict their consumption during life sufficiently to offset the effect of the duty on their heirs' inheritance. There is, therefore, no *a priori* reason why death duties should diminish the proportion of income saved more than an income-tax, although progressive death duties will probably diminish the proportion of income which is saved at least as much as a progressive income-tax. Since death duties will diminish the incentive to spend money on capital development less than an income-tax, and will diminish the proportion of income saved as much as an income-tax, we may conclude that death duties will have a greater effect in reducing unemployment than an income-tax.

Finally, we must discuss the effect of progressive death duties upon the optimum amount of work and upon the optimum proportion of income which should be saved when there is full employment. As we argued on p. 241, an income-tax, and especially a progressive income tax, will have disadvantageous effects upon the optimum amount of work done by each person, because a progressive tax on earned incomes will cause a discrepancy between the real reward of work and

its marginal product. Death duties will not have this effect; for death duties do not prevent a man, who by working more adds something to his income, from keeping the whole of this additional income. In this respect death duties have great advantages over an income-tax.

Death duties will reduce the proportion of the national income which is saved at least as much as an equivalent income-tax. There is therefore the same possibility that, if full employment has been achieved by the measures suggested in Part I, progressive death duties may reduce the proportion of the national income which is saved below the optimum, as defined in Part IV. But for this there is the same simple remedy as in the case of the income-tax. The state may use only part of its revenue from such duties to increase the incomes of the poor, and may itself save the remainder, using these sums to redeem the national debt or to purchase any other appropriate forms of property. By such means the state can prevent any undesired reduction in the proportion of the national income which is saved.

All the arguments employed in this discussion of death duties are equally valid in the case of any taxes levied on property or on income from property as opposed to income from work. Such taxes include a progressive income-tax, from which earned income is exempted, and taxes levied annually on the value of the property owned by each individual. We may therefore summarize the arguments of this chapter in this way: incomes may be redistributed by taxing the rich and using the revenue to increase the incomes of the poor. For this purpose commodity taxes are to be ruled out, both because they are inappropriate taxes for the raising of revenue from the rich and because they cause an undesirable redistribution of factors of production among different occupations. A highly progressive income-tax is the best instrument for the purpose of redistributing incomes, and further it has no disadvantageous effects upon the distribution of factors of production among different occupations. It will probably help to cure unemployment. Although it

may somewhat reduce the incentive to spend money on capital goods at any given rate of interest, it will certainly reduce the proportion of income which is saved and will so stimulate activity. The great disadvantage of a general income-tax is that it will necessarily upset the proper balance between work and leisure. If the income-tax reduces the proportion of income saved to an undesirably low level in conditions of full employment, this may be remedied if the state itself saves part of the tax revenue. Death duties or any taxes on property or on income from property alone will be slightly less efficient than an income-tax in redistributing incomes, since they cannot directly affect inequalities of income from work. But they have two distinct advantages over the income-tax. First, they will not diminish so much the incentive to spend money on capital development. Secondly, they will not disturb the proper balance between work and leisure. In their other effects they are similar to an income-tax. From this we may conclude that redistribution of income through progressive death duties or other taxes on unearned income can have no serious economic disadvantages provided that, if necessary, the state is itself prepared to save part of its tax revenue for the purchase of property of one form or another.

V

REDISTRIBUTION OR SOCIALIZATION OF PROPERTY

IN order to remove the most important cause of inequalities of income, namely the unequal ownership of property, measures might be taken to ensure that property was owned in more equal amounts by all members of the community and not concentrated in the hands of a few persons. The ideal at which this solution would aim is the attractive 'distributist' state in which all men are free, equal, and independent, because all men own a modicum of property without any glaring inequalities in such ownership.

This 'distributist' state could be brought about by means of steeply progressive death duties, which would take all, or nearly all, property above a certain figure away from the rich to give it to the men who had less property. No single redistribution of property would suffice, unless some provision were made for the redistribution of property at death, Otherwise inequalities would soon appear again, and would perpetuate and accentuate themselves; for once one family obtained a measurable advantage in income over others it would be easier for it to accumulate still more property and easier for its members to train for the best paid occupations. Alternatively, the 'distributist' state might be attained by fundamental changes in the laws of inheritance, whereby a man who died was not allowed to leave more than a certain amount to any single individual, or—better still—whereby no man was allowed to inherit an amount of property so great that together with the property which he already owned he would possess more than a certain total estate.

Such a policy would have the same advantages and disadvantages as progressive death duties, which were discussed at the end of the last chapter. It would help to cure unemployment, since it would not diminish the incentive to borrow money to spend on capital development at any given rate of

interest, and since it would cause a reduction in the proportion of income which was saved. It would in no way prevent factors of production from flowing into those occupations in which the value of their marginal products was highest. It would not interfere with the proper balance between work and leisure, since it would not prevent any man from earning for his work a reward equal to the value of his marginal product. On the other hand, it might seriously reduce the supply of savings below their optimum level in circumstances of full employment. If all rich men knew that they could not leave more than a moderate sum to their own dependants, the main incentive for a very large part of the community's savings would be entirely removed. For this reason the state might be obliged to fill this gap by raising revenue to devote to the purchase of property of one form or another.

We have concluded that in redistributing income either by progressive taxes used to increase the incomes of the poor or by a direct redistribution of property, the state will probably be obliged itself to accumulate property, as soon as full employment is achieved. Such action will gradually lead to the socialization of the ownership of a considerable amount of property. We must therefore discuss how the state should use the income from state-owned property to promote equality.

If the state owns a considerable amount of income-bearing property, it will be in a position to control directly the proportion of the national income which is saved. In Part IV, Chapters III and IV, we discuss the principles upon which this decision should theoretically rest. That part of its income from property which the state decided to save would either be handed over to those in charge of socialized industries for expenditure on capital development, or would be used to purchase securities and other forms of property in the market, or would be lent at interest to privately controlled concerns. By this means the state could ensure that the savings flowed into those uses in which the real yield on capital was highest. The state could use part of its income from property to finance its ordinary expenditure on justice,

defence, &c., without raising money by commodity taxes or by an income-tax. This is a further advantage of state ownership of property, since taxes on particular commodities will disturb the best distribution of the community's resources between different occupations, and an income-tax will upset the best balance between work and leisure. The remainder of its income from property could be used to promote equality. It could either be spent on education, health services, pensions for old age or for widows, or family allowances, or could be distributed as an equal 'social dividend' to all members of the community.

To achieve substantial equality of income by this means does not necessarily imply that all property should be owned by the state. If the state owns sufficient property to ensure that the optimum amount of the national income is saved, to achieve a considerable degree of equality in incomes, and to finance its ordinary expenditure without resort to commodity or income taxes, the rest of the community's property might well be left in private ownership. In order to prevent such private ownership from causing the regrowth of great inequalities, private estates over a certain size should be subjected to heavy death duties, designed in such a way as to prevent any man from leaving an estate over a certain moderate size to any one individual. As we have already argued in Part II, Chapter VIII, p. 190, a clear distinction must be drawn between state ownership and state control of property. It is quite possible for the state to own land and to let it out at a fixed rent to private individuals to manage and to farm. It is equally possible for the state to leave the land in private ownership and itself to hire it at a fixed rent in order that agriculture may be state-managed. In Chapter VIII of Part II we concluded that, in order to achieve the best use of the community's resources, property in monopolistic industries should be socially managed. In this chapter we conclude that to obtain equality of income a certain amount of property should be socially owned. It may be that the state should own more property than it

manages or should manage more property than it owns. This depends simply upon the amount of property which must be socially owned to achieve equality and the amount which must be socially managed to offset the effects of monopoly. The important point to realize is that state ownership and state management are not the same thing, that they are desirable for quite different reasons and that they do not necessarily go together.

By state ownership of property complete equality of income from property could be achieved. At first sight it appears that by this means all inequalities of income from work might also be offset. For the state could use part of the income which it received from state-owned property in order to pay allowances to individuals who earned little from work, so as to equalize their total incomes with the incomes of those whose earnings from work are high. In particular industries, which were socially owned and controlled, the state could deliberately pay wage-rates greater than the marginal product of labour, if this was necessary to promote equality of incomes from work. But such policies would be open to two serious objections, because a man's total income would no longer depend upon the value of the marginal product of his work. First, no man would have any incentive to move from occupations in which his marginal product was low to occupations in which it was high, so that labour would no longer tend to distribute itself automatically among different occupations in such a way that consumers' needs were best satisfied. Secondly, the correct balance between work and leisure would be upset. If each individual knows that his total income will not vary even if his income from work varies, he will no longer have any incentive to choose the best balance between work and leisure. He would presumably work as little as possible, so that the state would have to set minimum hours of work. But the state is unlikely to impose the proper balance between work and leisure. the judgement of which is best left to each individual.[1]

[1] *v.* Part IV, Chapter II, pp. 259–61.

We are here up against a fundamental dilemma in any attempt to distribute income equally. It may be desirable from the point of view of the distribution of income to get rid of inequalities of income from work, but to do so will cause considerable difficulty in achieving the best use of the available labour and the best balance between work and leisure. For by whatever means equality of earned income is achieved, it is bound to mean that people's net incomes will not vary with the value of the marginal product of their work. In the choice of a tax policy or of a policy of paying allowances to supplement low incomes, the advantage of greater equality of earned incomes must be balanced against these disadvantages. If complete equality of income from property is obtained by the social ownership of property, and if complete equality of opportunity for training for the best paid jobs is ensured by means of an educational policy based on the principles outlined above in Chapter II of this Part, inequalities of income will be greatly diminished, even if the remaining causes of inequalities of income from work were left untouched.

If we accept this method of achieving equality, there remains for discussion the problem of the transition from private to state ownership of property. The state must first raise surplus revenue by taxation and use the proceeds to buy up privately owned property. Clearly the first block of such property to be bought up would be the national debt of the state. As the capital sum of the state's debt was redeemed, the amount which the state had to pay in interest on the debt would be diminished so that taxes on the poor could gradually be remitted, or expenditure designed to promote equality could be increased. After the national debt had been redeemed, the state could invest its surplus revenue in the purchase of other forms of privately owned capital. It would naturally choose in the first place to redeem the privately owned debt of any industries which had been socialized, and would for example buy up the stock of the London Passenger Transport Board or of similar socialized concerns. After

this it might invest in the debt of local authorities. Finally, it might purchase the debentures of private industries or invest in the purchase of land. Each stage would either diminish the state's expenditure on interest on debt or would increase the state's income from interest or rent. It would thus gradually be in a position to develop fully its policy for the redistribution of income.

We have already discussed in the last chapter the principles upon which the revenue for the socialization of property might be raised. We concluded there that progressive death duties might be imposed, part of the revenue from which could be used by the state to purchase property, if the imposition of these duties threatened to reduce the community's savings to too low a level. The transition towards state ownership of property can always be speeded up by imposing heavier duties on privately owned property. The payment of these duties will in itself increase the proportion of income saved in as far as the taxpayers reduce their expenditure to meet the duties, and will reduce the proportion of income saved in as far as the taxpayers reduce their savings or sell part of their property to meet the heavier levies. By using a larger part of the revenue to promote expenditure by the poor the state can prevent such a policy from causing so large an increase in savings that unemployment results, and by using a larger part of the revenue to buy up privately owned property the state can prevent the proportion of income saved from falling below the optimum in conditions of full employment.[1]

[1] In this discussion we have ignored the possibility that owners of property may attempt to escape the levy by removing themselves and their capital to other countries. In Part V, Chapter III, we shall discuss the effects of an increase in foreign lending, and shall suggest measures by means of which the government can, if necessary, prevent an export of capital.

PART IV
THE SUPPLY OF THE PRIMARY FACTORS OF PRODUCTION

I
LAND, LABOUR, AND CAPITAL

WE are still left with one fundamental economic problem, which it is the object of this Part to discuss. Since the amount of the primary factors of production is not rigidly fixed, we have to decide how these factors can be made available to the community in the best or 'optimum' amounts.

It is usually held that there are three primary factors of production—land, labour, and capital—from the use of which all the real income of the community is obtained. This view is correct so long as the nature of these three factors is properly interpreted. By land we must mean all the natural resources of the community which are useful for the production of commodities or for the immediate satisfaction of human needs. Land, therefore, must be interpreted to include not only the surface of the earth, but also the fertility of the soil, the natural supply of minerals, the water supply available for power and for other purposes, and all the resources whose presence is not due to human activity. Labour must be interpreted to mean the whole of man's current activity in producing goods and services. It must include, besides ordinary manual labour, the work of technicians, of those directing business concerns, and of doctors and others who provide direct personal service. Capital is the whole stock of man-made instruments of production in existence at any one time, which are useful for the production of real income. Capital must include the stock of machines, buildings, and raw materials, the existing improvements in the land which are due to human labour, and even such immaterial things as the existing stock of

human knowledge and capability, which is due to the expenditure of past human effort on the education and training of men.

If we accept these interpretations of the three primary factors of production we can see that the production of any finished commodity or service is wholly due to the use of these three factors in one form or another. In Part I, Chapter I, pp. 2–3, it was argued that the costs of any firm could be reduced to six items:

(i) the wages of labour employed by the firm;
(ii) the interest to be paid on the capital borrowed by the manufacturer;
(iii) the rent or royalties to be paid for the use of land or other natural resources by the manufacturer;
(iv) the cost to the manufacturer of purchasing the necessary raw materials to make the finished product;
(v) the payment to be made for the repair and replacement of machinery and plant which wears out as the finished commodity is produced;
(vi) a profit to the manufacturer sufficient to make him willing to carry on with the production of the commodity.

All these items of cost can be reduced to payments for the use of the three primary factors of production: land, labour, and capital. Item (i) is clearly a payment for labour, item (ii) a payment for land, and item (iii) a payment for capital. Items (iv) and (v) can, as we argued in Chapter I of Part I, be reduced to the wages, rent, interest, and profit earned in the industries producing raw materials and machines, so that they are made up of payments for labour, land, and capital together with a certain profit of management. But this profit of management together with item (vi), the profit received directly by the producers of the final commodity, represents either a payment to the manufacturers for their own labour of management or else interest on capital, in so far as the manufacturers themselves own the capital which they use.

All the factors of production used in the production of any commodity can be reduced to land, labour, and capital; but it is not possible, as has sometimes been supposed, to reduce capital itself to land and labour. It is true that the physical capital goods, such as machinery, must have been produced in the past by the use of natural resources and of human labour. But in spite of this, capital is a factor of production independent of labour and land. We can see this best by taking a simple illustration. Let us suppose that the production of a certain amount of boots requires the employment of 50 men and a unit of land in the boot manufacturing firm, and of 50 men and a unit of land in industries producing raw materials and machines, in order to replace the boot manufacturers' stock of capital goods as they are used up or worn out. Then the production of these boots requires 100 units of labour and 2 units of land; but it *also* requires the existence of a stock of machines in use and of raw materials in process. If there were no such stock of capital the 100 units of labour and the 2 units of land could be used directly without any equipment in an attempt to produce boots; but clearly a smaller number of boots would in these circumstances be produced. If a certain amount of capital equipment is used, only part of the labour and land will be used directly to produce boots, and the other part will be used to maintain the stock of capital goods and equipment as it is used up by the production of boots. In the one case, few boots would be produced with a given amount of labour and land but no capital; in the other case more boots would be produced with the same amount of labour and land and with a certain constant stock of capital. Thus three primary and independent factors of production exist:

(i) the current use of an existing stock of capital, i.e. of instruments of production and of raw materials;

(ii) the current expenditure of a certain amount of human effort, part being used directly to produce the finished commodity and part to maintain the stock of capital goods intact; and

(iii) the current use of a certain amount of natural resources, part again being used directly to produce finished commodities and part to maintain the existing stock of capital goods intact.

In deciding how the primary factors of production may be supplied in the 'optimum' amounts, it is clear that as far as natural resources are concerned there can be no problem. For these are things which man cannot vary in amount, but which are supplied in certain quantities by nature. But in the case of labour and capital, man can decide how much of these primary factors shall be supplied; for it is possible to vary the amount of work done and also the size of the stock of capital goods in existence. Chapter II of this Part will deal with the principles which should govern the total supply of labour, on the assumption that there is a constant stock of capital in existence; Chapter III will deal with the principles which should govern variations in the total stock of capital, on the assumption that there is a constant supply of labour. In Chapter IV we shall discuss briefly the principles upon which the supply of labour and of capital should be varied simultaneously, if at the start neither is supplied in the optimum amount.

II

THE OPTIMUM SUPPLY OF LABOUR

THE total amount of labour may be varied by a change in the amount of work done by each member of the community or by a change in the size of the population. When both these variables are at their optimum point, we have the optimum supply of labour. A discussion of these two optima, on the assumption that there is a constant stock of capital, forms the subject of this chapter.

Different ways in which the amount of work done by each person can be varied have already been mentioned in Part III, Chapter II, pp. 225, 226. An increase in the work done per member of the community may be obtained by an increase in the number of hours worked per day or in the number of days worked per year, by lowering the age at which people start work or raising the age at which they retire from work, or by an increase in the number of members of each family who seek work—e.g. a wife may decide to go out to work instead of staying at home. It may appear unreal to suppose that the average worker has any control over his daily hours of work. In occupations in which a man is his own master, he may be free to decide whether he will work more or less. But if a man is employed in a factory, in which the hours of work are fixed, he can either work the fixed number of hours a week or not work at all. But even so the number of hours of work done per person can be varied considerably. The workers, either directly or through their trade unions, in settling the terms of work with their employers can bargain for a reduction or for an increase of hours of work at the current hourly wage-rate; and hours of work have, in fact, been considerably changed by this means in the course of the last century.

It is easy to see that if the wage which people are paid for their work is equal to the value of the marginal product of their labour, the amount of labour supplied by a given

population will—with certain reservations to be made later—tend towards the optimum. For the optimum amount of work will be done so long as people work up to the point at which the marginal disutility of work, i.e. the amount of satisfaction which they would lose by doing another hour's work, is just equal to the marginal utility of the marginal product of work, i.e. the additional satisfaction which is to be obtained from the consumption of the extra product due to doing one more hour's work. If the marginal disutility of work is less than the marginal utility of the marginal product of work, people would be better satisfied if they worked more. By working an extra hour they would diminish their satisfaction, through the loss of leisure and the unpleasantness of the extra work, by less than the addition to their satisfaction from the extra product produced. It follows that, if people are paid for their work a wage-rate equal to the value of the marginal product of work, and if they are left free to decide how much work they will do, either directly or through trade-union or similar collective action,[1] there will be a tendency for the optimum amount of work to be done per head of the population. In these circumstances, the utility of the hourly wage-rate offered will measure the marginal utility of the marginal product of labour, and people should then be left free to decide whether the marginal disutility of work was so small or so great as to make it worth their while working more or less. Workers will then bargain for those hours of work and for those holidays at the current marginal product of work,

[1] Different individuals have different desires for real income and for leisure according (e.g.) to their tastes and the size of their dependent family. For this reason it is often argued that collective action is useless for the purpose of obtaining the best balance between work and leisure. This is, however, an exaggeration. Often for technical reasons every one in a factory must work the same number of hours, so that every individual cannot obtain the best balance between work and leisure. But collectively the workers can bargain for a change in the number of hours worked at a given hourly wage-rate to obtain that number of hours which represents the 'centre of gravity' of the wishes of the different individuals. For this reason collective action may have a useful function in achieving the best balance between work and leisure.

which represent the best balance between work and leisure. The wife will go out to work only if the utility of the additional product due to her work is greater than the disutility of the work. The worker will retire when the utility of the additional product due to his staying in work is less than the disutility of his work.

The only important modification of this method of securing the optimum amount of work per head is in the age at which persons start work. As we have argued in Part III, Chapter II, pp. 215–17, the investment of a certain sum of money in a longer education—which sum must include the actual cost of the education plus the amount which the child might have earned during the years of education—may considerably increase the earning power of the child and may represent a capital investment which from the purely economic point of view has a high yield. But either because parents underestimate the actual increase in earning power which education can bring, or because from sheer impatience they wish to launch the child at once into an occupation in which he can earn, or because poor parents are unable to provide sufficient security to borrow money for education at the current rate of interest, much desirable expenditure on education and the consequent rise in the age at which work begins may not take place, unless the state interferes. Further, if there is no state interference, it is the parents who must make the investment in education and the sacrifice which it involves, while it is in the main the children who will gain through the increased ability to earn. For any or all of these reasons children may be set to work earlier than is desirable even from the strictly economic point of view.

The principle that the wage-rate should be made equal to the value of labour's marginal product, in order to achieve the best balance between work and leisure, is one of the reasons for some of the decisions which we have already reached in the previous Parts of this book. Here it is necessary only to enumerate these points briefly.

(i) There should be no income-tax, and in particular no

progressive income-tax, on earned incomes (cf. Part III, Chapter IV) and no taxes levied per unit of labour employed, as, for example, in the case of contributions for health insurance (cf. Part I, Chapter IX).

(ii) There should be no subsidization of employment in competitive industries, in an attempt to increase employment without a reduction in the real wage-rate (cf. Part I, Chapter IX).

(iii) There should be no legal restriction of hours of work and no compulsory retirement from industry at a given age in order to reduce unemployment (cf. Part I, Chapter IX).

(iv) In Part II we have shown that in monopolistic conditions, labour, being one of the hired factors of production, will be offered a reward lower than the value of its marginal product. This involves two evils: (*a*) the maldistribution of labour among different occupations, and (*b*) the disturbance of the proper balance between work and leisure. To cure the former evil it is only necessary to ensure that the value of the marginal product of labour is the same in every occupation, but to cure the second it is necessary to ensure that the wage paid to labour is equal to the value of its marginal product in every occupation. For this reason it is preferable to remove the wastes of competition by measures which make the reward of labour equal to the value of its marginal product—e.g. by fixing maximum commodity prices and minimum wage-rates or by the socialization of monopolistic industries—rather than by measures which only ensure that the value of the marginal product of labour is the same in every industry—e.g. by a system of taxes and subsidies on employment in different occupations (cf. Part II, Chapter VII).

(v) The payment of state allowances to equalize earned incomes or the raising of the wage-rate paid in socialized industries above the marginal product of labour will upset the proper balance between work and leisure (cf. Part III, Chapter V).

We must now turn to changes in the total supply of labour

due to variations in the size of the population. We have here to answer the following questions: What do we mean by an optimum population? Is there any reason to believe that the population automatically tends to grow to this optimum size? If not, how can we judge whether the population is too large or too small? Finally, how can we control the size of the population and cause it to tend to the optimum size?

We may mean by an optimum population either that population which will produce the greatest total amount of satisfaction, or that population which will produce the greatest satisfaction per head. Suppose that real income per head would be high if there were only a small population, and would be lower, but not very much lower, if there were a considerable increase in the population. In such circumstances satisfaction per head would be greatest with a small population, whereas with a larger population the total amount of satisfaction would be greater, since there would be a much larger number of persons each enjoying a slightly lower amount of satisfaction. We have therefore to determine whether—from the purely economic point of view[1]—we desire that number of persons which will raise the individual standard of living as high as possible, or that number which will ensure the greatest aggregate sum of human satisfaction. In my opinion the proper definition of the optimum population is that which maximizes satisfaction per head, which is, of course, the same as the population which provides the greatest real income of commodities and services per head. In what follows the optimum population will be defined in this sense, and it is left to any reader who chooses the alternative definition to modify the argument appropriately.

If the growth of population is not consciously controlled, it will be an accident if the population happens to be of the

[1] Other considerations may be important besides economic satisfaction. For example, an increase in the number of human souls may itself be of value. In the text we are concerned only with the maximization of economic welfare, and our conclusions may need modification if the maximization of some other good requires a different policy.

optimum size, as we have defined that term. The motives which cause people to have larger or smaller families are obscure and are not primarily economic, so that there is little probability that people will adjust the size of their families in such a way that the population is of the optimum size. If—as was at one time held to be true—workers always increased the size of their families so long as their income was above the subsistence level, the population would always grow beyond the optimum. If, as is probably nearer the truth, people restrict the size of their families with the object of ensuring that their children will be in a position to enjoy a higher standard than they enjoyed, there is still no reason to believe that the population will automatically approach the optimum. If the population is below the optimum, the standard of living can be raised only by an increase of population; but people may still restrict the size of their families in an attempt to obtain a better start in life for each child.

How then can we judge whether the population is greater or less than the optimum size? In this chapter we shall assume that there is a certain stock of natural resources and of capital to be used by the working population; and we shall inquire how we can decide whether real income per head would be increased by an increase or by a diminution in the numbers of the working population, without any change in the amount of capital with which it is to co-operate. If in these circumstances the population were very small, real income per head could be increased by a growth in the population. After a certain increase, real income per head would reach a maximum, and any further growth in the population would cause it to fall.

There are two opposing forces at work. If the population is very small there will be little opportunity for the specialization of work among different workers, i.e. for 'the division of labour'. If there were only one man in the community, he might have to spend one third of his time making bread, one third of his time making clothes, and one third of his

time building and repairing his house. If, however, there were three persons, one of whom spent all his time making bread, one making clothes, and one building houses, the community's supply of bread, clothes, and houses would be more than three times as great. For each man, by concentrating on one job, would save time, would obtain a greater skill, and would choose that job for which he was naturally most suited. In the production of each commodity there are a large number of slightly different processes and jobs, and there are also a large number of different commodities to be produced. In order, therefore, that there may be the fullest division of labour, the population must grow to a considerable size.

There is a further reason why, up to a point, a growth in the population to be employed with a given amount of land and capital will cause real income per head to increase. In Part II it was pointed out that in every industry the capital equipment must for technical reasons be of a certain minimum size, however small an output is produced, so that the output could be increased up to a point without a proportionate increase in equipment. To print one copy of a book or newspaper requires a minimum capital equipment of type and machinery, or to produce a few motor-cars requires a minimum capital equipment. To run two instead of one train a day requires no larger equipment of tunnels, stations, embankments, lines, &c. If, therefore, the population is very small, an increase would raise real income per head; for the increased population could be set to work to use the capital more fully, and there would be little or no increase in the work necessary to maintain and repair the existing stock of capital. If there is not a full utilization of capital equipment, which for technical reasons can only be fully utilized if there is a fairly large total demand for the products of industry, a growth in the population, by causing an increase in the total aggregate demand for commodities, will cause the capital to be more fully utilized and will so lower real costs of production per unit of output; and this

means that the growth of population will cause a rise in real income per head.

But there is a second and opposing tendency at work. Before the population has benefited fully from the division and specialization of labour and from the full utilization of the capital equipment, a further growth in the population will cause a fall in real income per head. For if there is a given amount of natural resources and a given stock of capital equipment, a growth in the population must mean that each worker is equipped with less capital and natural resources, and this in itself will tend to cause output per head to fall. As the population grows, a point will be reached when the fact that each labourer would have a smaller equipment of natural resources and of capital outweighs the advantages to be gained from the greater specialization of labour and the fuller use of certain types of capital equipment. The larger the population, the less important will the advantages of large-scale production become, and the more important will be the fact that there is little capital and land to use with each worker, so that at some point output per head would be reduced by a further growth of numbers.

If it is agreed that, with a given equipment of land and capital, real output per head will grow up to a maximum point and then fall as the population increases, we can discover a method of determining whether the population is less or greater than the optimum. This point can be explained by means of the arithmetical illustration given in Table IX.

In this Table the figures in column A represent the total population, the figures in column B show the output of commodities per head of population, the figures in column C show the total output for each population and are obtained by multiplying the figure in column A by the corresponding figure in column B. The figures in column D show the marginal product of labour, or the amount by which the total output in column C is increased by increasing the population by one unit; these figures are obtained by sub-

tracting from the corresponding figure in column C the previous figure in column C. When the population grows from 8 to 9, the total output increases from 768 to 891 and the difference between these figures—namely 123—is shown in column D as the marginal product of the 9th worker. The figures in this Table have been chosen so that output per head rises as the population increases up to 10 or 11 and

TABLE IX

The Optimum Population

A	B	C	D
Population	*Output per head*	*Total output*	*Marginal product*
5	75	375	..
6	84	504	129
7	91	637	133
8	96	768	131
9	99	891	123
10	100	1,000	109
11	100	1,100	100
12	99	1,188	88
13	96	1,248	60
14	91	1,274	26

then falls, so that the optimum population is 10 or 11. It is to be observed that so long as the marginal product of labour is greater than the existing output per head, an increase in the population would raise the output per head. Suppose that the population is 7 and the existing output per head is therefore 91. Table IX shows that the marginal product of an extra or 8th man is 131, which is greater than the existing output per head, so that to have an 8th worker would raise output per head from 91 to 96. This is a natural and necessary fact. If an increase in population by one unit would increase the total output by more than the existing output per head, then an increase in the population will raise output per head, just as a cricketer will raise his batting average, if he goes in for one more innings and makes a score greater than his existing batting average (cf. p. 106 above). From

Table IX it can also be seen that as soon as the marginal product of labour has fallen below the existing output per head, an increase in the population would cause output per head to fall; for if the employment of one more man adds less to the total output than the existing output per head, output per head must be reduced by his employment.

We now have a method of judging whether with a given amount of land and capital the population is greater or less than the optimum. If the marginal product of labour is less than the average output per head, the population is greater than the optimum, and a fall in the population would raise output per head. If the marginal product of labour is greater than the average output per head, the population is below the optimum and an increase in the population would raise output per head. The test, therefore, is simply this: if the payment of wages to labour, equal to the marginal product of labour, would not absorb as much as the total output of the community, because output per head is greater than the marginal product of labour, the population is greater than the optimum. If, however, output per head is less than the marginal product of labour so that there would not be a sufficient output to pay labour a wage-rate as great as its marginal product, the population is too small.

This principle does not imply that there is too great a population, if in a *laisser-faire* economy the whole of the product does not go to labour. If the population is of the optimum size, a small increase in the population will cause no rise or fall in output per head; for until this point is reached, an increase in population would cause a rise in output per head, and after this point an increase in population would cause a fall in output per head, so that at this point an increase in population would cause no change in output per head. In other words, at the optimum population a 1 per cent. increase in the supply of labour would cause a 1 per cent. increase in the total output. In this case a 1 per cent. increase in the supply of capital and land as well as of labour would cause output to increase by more than 1 per cent., since a

1 per cent. increase in labour alone is sufficient to cause a 1 per cent. increase in total output. In other words, in these circumstances there must still be some economies to be derived simply from producing on a larger scale; for in the absence of any such economies a 1 per cent. increase in every factor of production would cause total output to rise by no more than 1 per cent. But there can be economies of large-scale production only if there are still economies to be derived from the further division and specialization of labour, or from the further utilization of certain forms of capital equipment. If this is so, there are bound to be monopolistic conditions. For these economies can exist only if the total demand for a product is not sufficient to allow the fullest utilization of *one* single form of capital equipment, such as a railway line, or if the total demand for a product is not sufficient to allow the fullest division of labour among different tasks, even if there is only *one* single worker undertaking each specialized task. In these circumstances there cannot be perfect competition; there must in some industries be only one, or at the most a few, independent units of capital equipment, or independent firms in which labour is specialized on different tasks. But as we have seen in Part II, Chapters IV and V, in a *laisser-faire* economy labour will be paid less than the value of its marginal product if monopolistic conditions exist. It follows that in a *laisser-faire* economy labour will not receive the whole product, if the population is of the optimum size, because at this point it would receive less than its marginal product.

If, however, all monopolistic industries are socially controlled and managed on the principles suggested above in Part II, Chapter VIII, pp. 190–5, and an attempt is made everywhere to pay labour a wage equal to the value of its marginal product, it is possible immediately to say that the population is at the optimum if this absorbs the whole product; that it is greater than the optimum if this absorbs less than the whole product; and that it is less than the optimum if such payment of labour is impossible because

it would absorb more than the whole product of industry. This does not mean that if the population is at the optimum the wage paid in each separate industry should just absorb the total product of that industry. For in some industries, in which the economies of large-scale production are not important, the marginal product of labour may be less than the output per head and these industries will pay to labour less than the total output of the industry. But in others in which the economies of large-scale production are very important, the marginal product of labour may still be considerably in excess of output per head, and these industries will be operated by the public bodies controlling them in such a way that their wage-bill is greater than their total receipts. Their losses must therefore be financed by the profits earned in the first class of industry, in which labour's wage does not absorb the whole of the product. If the population is at the optimum, the payment to labour throughout the whole of industry of wages equal to the value of its marginal product will just absorb the whole income of the community. It follows that if the population is near the optimum and if labour is paid a wage equal to the value of its marginal product in all industries, it will be necessary for the state to own *all* property, since the income derived from property in industries which still make profits will be required by the state to subsidize those industries in which losses are made.

In these circumstances the state must revert to taxation to raise funds for its ordinary expenditure or to provide funds for savings; for there will be no net income from state-owned property to be used for these purposes. Death duties will be impossible, since no significant amount of property will remain in private ownership. Commodity taxes are open to the objection that they divert factors of production to the wrong occupations (cf. p. 235). A progressive or proportionate income-tax will upset the best balance between work and leisure (cf. p. 241). We are faced with a dilemma. If the population is at the optimum, and labour is paid a reward equal to its marginal product, the whole of the

national income will go to labour. Wage income will therefore be the only source of income to tax to raise money for ordinary expenditure or to build up the community's stock of capital. But, as we have seen, a tax on earned income will disturb the proper balance between work and leisure. This difficulty might be overcome by the imposition of a poll-tax, i.e. a tax which levies the same fixed sum from every individual whatever his income may be. The state could then raise revenue without disturbing the proper balance between work and leisure. For if every one had to pay a fixed sum of £100 in taxation, and at the same time received a wage-rate equal to the value of his marginal product, it would still be true that by working one more hour a man would add to his income the marginal product of that hour's work; for the amount of a poll-tax does not increase because the man increases his income by working more. The disadvantage of a poll-tax is that it makes no allowance for inequalities of income. But in the circumstances which we are examining, a poll-tax will not be as unjust as appears at first sight. For the whole national income will go to labour, so that there will be no inequalities of income from property. If in addition capital is invested in education on the principles discussed in Part III, Chapter II, pp. 214–18, only inequalities of earnings due to differences in natural ability will remain. But there is a fundamental dilemma here,[1] and the state would have to compromise between the extremes of a poll-tax which will not disturb the proper balance between work and leisure and a progressive income tax, which is most desirable from the point of view of the distribution of income.

While it is possible in this way to judge whether the population is too great or too small, any discussion is academic unless it is possible to decrease the population if it is too

[1] This difficulty will not be removed until the biologist can tell us how to control men's natural abilities, so that those men whose marginal product has a high value can be forthcoming in greater numbers and those whose marginal product has a low value can be diminished in number, until the value of each man's marginal product is the same.

large and to increase it if it is too small. Direct state control of the numbers of the population is not only difficult, but to many will appear repugnant for reasons that are not economic. Yet if this test of the optimum size of the population were recognized, there would, at least, be a scientific basis for informing individuals whether the general standard of living would be raised by an increase or by a decrease in the size of the family. The state might go farther, and encourage large families by paying substantial allowances for each child in the family. But there might, of course, be a direct conflict between the best distribution of the national income and the prosecution of a policy designed to promote an optimum population. For example, in order to reduce the numbers of a population which was above the optimum, it might be desirable to tax large families in order to pay allowances to the childless, although such action would distribute the national income in an uneconomic fashion. But at present this country is threatened with a severe and unlimited decline in population, and therefore, sooner or later, with underpopulation. In such circumstances family allowances are desirable from every point of view.[1]

There is one final point which will be important for our argument in the next chapter. The fact that, if the population is of the optimum size and labour is paid a wage equal to its marginal product, there will be no income left over to go in interest on capital or rent of land, does not mean that the marginal products of capital and land are zero. The population is of the optimum size when the economies of large-scale production are just offset by the fact that, with a given amount of land and capital, an increase in the population would cause each unit of labour to be equipped with less land and capital. But if this is so, it must still be of importance to have a greater supply of land and capital—or of one of them at least—so that an increase in their supply would cause some increase in the total output.

[1] See Note on the Trend of Population, pp. 389–92.

III

THE OPTIMUM SUPPLY OF CAPITAL

IN this chapter we shall discuss what determines the optimum size of the stock of capital, on the assumption that there is a given supply of labour. To do this we must show, first, how the amount of capital may be varied without any variation in the amount of land or labour, and, secondly, how the marginal product of capital may be measured. Suppose that there are 3 units of land and 300 units of labour to be employed. If this land and labour were all used directly to produce wheat, there would be no capital in existence and the output of wheat would be small. Suppose, however, that 1 unit of land and 100 units of labour were used to produce ploughs and the remaining 2 units of land and 200 units of of labour were employed with the ploughs to produce wheat. There would now be a constant capital stock of ploughs in existence and the 1 unit of land and 100 units of labour would be employed in constructing just sufficient ploughs to replace the existing stock of ploughs as they wore out. The output of wheat would almost certainly be greater if the 3 units of land and 300 units of labour were employed in this way than if they were all employed directly to produce wheat without any stock of ploughs. If now 2 units of land and 200 units of labour were set aside to produce agricultural machinery and only 1 unit of land and 100 units of labour were left to produce wheat directly with this machinery, there would be the same amount of land and labour used directly or indirectly to produce wheat, but there would be a larger capital stock of machinery to be employed with this labour and land. The output of wheat might be further increased by adding to the capital stock in this way, although a point will be reached at which the use of more labour and land to maintain a larger stock of capital equipment will leave so little labour and land to use that equipment that the final output would be reduced.

By setting a larger proportion of a given supply of labour

and land to produce machinery and other capital goods a larger stock of capital can be maintained, and up to a point this increase in the stock of capital goods will increase the total output of the community. In these circumstances, *as soon as* the capital stock has been increased, a larger output of finished goods will be produced by the given amount of labour and land, but *while* the stock of capital goods is being built up, the output of consumption goods will be smaller than before. Only by going without consumption goods, which could otherwise have been produced, can a greater stock of capital goods be produced, in order that the output of consumption goods may be permanently increased in the future.[1]

Thus if 1 unit of land and 100 units of labour are used to maintain a stock of ploughs by means of which 2 units of land and 200 units of labour produce wheat, the output of wheat will be permanently greater than the output which would be produced, if all the 3 units of land and the 300 units of labour were permanently employed to produce wheat directly. But in order to move from the second position to the first, the consumption of wheat must be temporarily reduced. For when 1 unit of land and 100 units of labour are set to produce the first ploughs, the remaining 2 units of land and 200 units of labour must produce wheat directly without the aid of ploughs, until the first ploughs have been constructed. During the time in which the stock of capital is being built up, consumption of finished goods must be cut down to allow some of the factors of production to produce the additional capital goods.

We can now show how the marginal product of capital goods should be measured. Let us suppose that one more plough is to be added to the stock. If the *same* amount of labour and land were to be used directly with one more plough in the production of wheat this would add something —let us say 20 units of wheat—to the annual output of wheat.

[1] We are, of course, assuming throughout this Part that full employment of the available resources has been achieved by the policies suggested in Part I.

We may call this the gross marginal product of a plough. But as one more plough has been added to the stock of ploughs, more labour and land will have to be used to produce ploughs to maintain this greater stock. Let us suppose that 1 more unit of land and 2 more units of labour must in future be regularly employed in the production of ploughs for this purpose. The net addition to the output of wheat will therefore be 20 units minus a reduction in output due to the fact that 1 less unit of land and 2 less units of labour are available to produce wheat directly with the increased stock of ploughs. This reduction in the output of wheat is equal to the marginal product of a unit of land used directly in producing it, since 1 less unit of land can be used for this purpose, plus twice the marginal product of labour used in the direct production of wheat, since 2 units of labour have had to move from its direct production. If the marginal product of land used directly for the production of wheat is 5 units of wheat a year and the marginal product of labour used in this way is also 5 units of wheat a year, then the net or true marginal product of a plough is 5 units of wheat a year. Its use would add 20 units to the annual output if it were used with the same amount of land and labour, but its maintenance requires the withdrawal of a certain amount of labour and land from the direct production of wheat and so a consequent reduction in the annual output of wheat by 15 units. The value of the net marginal product of a plough can be easily calculated, if labour and land in all industries are paid rewards equal to the value of their marginal products. If the farmer who intends to add one plough to his stock decides how much he would add to his output of wheat by using one more plough with the *same* amount of labour and land, and multiplies this by the current price of wheat, he will thereby calculate the value of the gross marginal product of the plough. If he subtracts from this sum the amount which he must set aside for the repair and maintenance of the extra plough, then—on the assumption that the factors of production are paid rewards equal to the value of their

marginal products—the result will give the value of the net marginal product of the plough. He will have subtracted from the value of the gross marginal product of the plough an amount equal to the value of the productivity in wheat production of the extra factors required to maintain an additional plough in the capital stock. If, therefore, all products are sold at prices corresponding to their marginal costs, so that the cost of maintaining an extra plough represents the value of the product which the factors so employed might have produced in any other occupation, the marginal product of a capital instrument may be measured by the value of its gross marginal product minus the cost of its upkeep and maintenance.

The marginal product of capital may best be measured as a percentage rate of profit in order that the value of the marginal products of different forms of capital instruments may be compared. Suppose that there are two forms of capital instrument—a mechanical plough and a mechanical reaper—both costing £100. If all commodities are sold at prices corresponding to their marginal costs, this means that it costs the community the same amount of factors to produce another plough as it does to produce another reaper. If the marginal product of the mechanical plough is £5 a year, reckoned by subtracting from its gross marginal product the annual cost of its upkeep, while the marginal product of the mechanical reaper is £3 a year, reckoned in the same way, the community would be better off if it used its factors to produce another plough costing £100 rather than to produce another reaper costing the same amount. Since the investment of £100 in a plough adds a net annual amount to the community's output valued at £5, we may say that the marginal product of capital invested in a plough is 5 per cent. per annum; and similarly the marginal product of capital invested in a reaper is only 3 per cent. per annum. It is to the community's interest that capital should be invested in those occupations in which the marginal product of capital reckoned in this manner is highest.

From this discussion of the nature of capital we may conclude that the community should continue to add to its capital equipment, until the capital stock is so large that its net marginal product has fallen to zero. If, for example, the marginal product of capital is still 5 per cent., this means that by spending £100 on the construction of an additional capital instrument—i.e. by one single sacrifice of consumption goods valued at £100 enabling the factors of production to be released to produce the capital instrument—the community can add *for ever* a net amount to its annual real output valued at £5. At the end of 20 years the community will have received an additional income equal in value to the sacrifice of consumption goods necessary for the investment, but the increase in annual income will last for ever, since we have allowed for the cost of permanent upkeep of the capital before reckoning its net marginal product.

Granted then that the stock of capital goods should be increased by saving until the marginal product of capital is zero, we have still to decide how much should be saved this year and how much of the necessary savings should be postponed until later years. When so much capital has been accumulated that no further addition can be made to real income by the further accumulation of capital, the real income of the community will be of its maximum size and the real satisfaction of economic needs will be as great as possible. We will call this condition the state of Bliss, which we are striving to reach through the accumulation of capital. Once the state of Bliss is reached it will continue for ever without the need for any further saving out of income. The only reason for saving more now is that the state of Bliss may be reached more quickly. The cost of saving more now is the loss of present satisfaction due to the fact that less can be consumed now. The gain from saving more now is that Bliss will be reached more quickly, so that men will have less years in the future in which their real satisfaction falls below the maximum obtainable in the state of Bliss. If people are rational, they will give up a present enjoyment if it enables

them to obtain a greater enjoyment in the future; and thus more *should* be saved so long as the present loss of satisfaction due to saving more is less than the future gain in satisfaction due to reaching Bliss sooner.

Suppose that the community is now saving 199 units of income a year. Let us consider whether the community ought to raise its present rate of saving by 1 unit to 200 units a year. If the community saves 200 units of income in a year, it will have saved 199 units of income in 199/200 of a year. Thus, by saving 200 instead of 199 units of income this year, the community will at the end of 199/200 of a year reach the position which it would otherwise have reached at the end of a whole year, so that it will reach Bliss and every stage on the way to Bliss 1/200 of a year sooner. The community will as before have to pass through every stage on the way to Bliss, but it will pass through each stage 1/200 of a year sooner; and this means that it will have 1/200 of a year more in the state of Bliss, and will have 1/200 of a year less at its present level of consumption. The gain from saving a 200th unit of income this year is therefore the excess of 1/200 of a year's satisfaction in the state of Bliss over 1/200 of a year's satisfaction in the present state.

But this advantage can be gained only by giving up one unit of consumption this year in order to save the 200th unit of income. The loss due to refraining from spending on consumption this additional unit of income is the marginal utility of this year's income, since the marginal utility of income measures the importance of having one more or one less unit of income to spend on consumption. Now the community should save more so long as the loss is less than the gain, i.e. so long as the marginal utility of this year's income is less than the excess of 1/200 of a year's satisfaction in the state of Bliss over 1/200 of a year's satisfaction at present standards. In other words, more should be saved now if 200 times the marginal utility of a unit of present income is less than the excess of one year's satisfaction in the state of Bliss over one year's satisfaction at present standards. But

200 measures the number of units of present income which are saved this year, so that we reach this conclusion: more should be saved now until the number of units of present income which are saved in a year, multiplied by the marginal utility of a unit of present income, is equal to the excess of one year's satisfaction in the state of Bliss over one year's satisfaction at present standards.

There are two reasons for believing that individuals, if left to themselves, will not save this 'optimum' amount of their incomes. In the first place, individuals will not always give up a present satisfaction simply because a greater satisfaction can thereby be obtained in the future. They are impatient—if for no other reason—because they are mortal, and do not consider the needs of their descendants as important as their own. On the other hand, the state does not die, and can consciously attempt to save more so long as the future gain is greater than the present loss.

There is a second and more important reason why individuals may not save the optimum amount. As we have seen in the last chapter, if the population is near the optimum, the whole of the national income will be required to pay labour a reward equal to its marginal product. For this purpose it will be necessary for the state to own most of the community's capital and land in order to subsidize the payment of wages in those monopolistic industries in which the payment of wages absorbs more than the total output from those competitive or less monopolistic industries in which the payment of wages absorbs less than the total output. In such circumstances, even if new saving could be left to the initiative of individuals, no interest could be offered on capital, so that the incentive to save would be very largely removed. And yet it may be proper for the state to save in these circumstances, since as we saw at the end of the last chapter the marginal product of capital may still be positive, even though the payment of a reward to labour as great as its marginal product absorbs the whole national income. In these circumstances the state would have to raise the funds

for its saving by means of taxation, and this point was discussed in the last chapter (pp. 270, 271).

Although no income will remain over to pay as rent or interest if the population is near the optimum and labour is paid a reward equal to its marginal product, it is important not to neglect the marginal products of land and capital. First, in order that the available amount of land and capital should be used in those occupations in which they are most useful, those in control of the socialized industries must estimate their marginal products. The state must allot the available amount of land and capital between different industries by comparing the estimates of their marginal products in different socialized industries and the rate of interest and rent which is offered for their use in any competitive occupations remaining in private control. Secondly, the state must know whether the marginal product of capital is positive, in order to know whether more capital should be accumulated.

We have provided a theoretical principle by which it can be determined at what rate the community should save on the assumption that there is a constant supply of land and labour. But in practice this rule will be almost impossible to apply; for to apply it the state would have to estimate—

(i) the extent to which the incomes of individuals would be increased if capital were accumulated to such an extent that its marginal product was zero;

(ii) the difference between the total satisfaction which could be obtained from such an income and the total satisfaction obtained at the current standard of living; and,

(iii) the present marginal utility of income.

Such estimates would be extremely uncertain, so that we may conclude that the community should save something as long as the marginal product of capital is positive, but that the state must decide in a rather arbitrary manner how much income should be saved each year.

IV

SIMULTANEOUS VARIATIONS IN THE SUPPLY OF LABOUR AND CAPITAL

IN Chapter II of this Part we examined how the supply of labour should be varied on the assumption of a given stock of capital; and in Chapter III we examined how the stock of capital should be varied on the assumption of a given supply of labour. In this chapter we must see whether the conclusions of those two chapters need modification, if both labour and capital are varied at the same time.

In Chapter III we defined the optimum supply of capital as that amount of capital which would be sufficient to reduce the marginal product of capital to zero, so that no permanent increase in income could be obtained by a further accumulation of capital. Variations in the total supply of labour will, however, alter the size of this optimum stock of capital. For if the population is small, it will require a relatively small stock of capital to satisfy all the possible ways in which capital can be used in co-operation with labour to increase the output of commodities; whereas if the population is large, it will require a larger amount of capital before all the possible productive uses of capital have been used up.

In a similar way the optimum size of the population may alter if there is an alteration in the total stock of capital. In Chapter II it was argued that the optimum size of the population depended upon the importance of economies of large-scale production. For the greater the advantages to be obtained simply from producing on a large scale, the more important is it to have a large population in order to maximize output per head. It is probable—though not certain—that an increase in the total stock of capital makes economies of large-scale production more important. It is probably less important to be able to produce on a large scale in a community in which hand work is important, because the absence of a large amount of capital necessitates working

with a small amount of machinery per head. If this is so, an increase in the supply of capital will itself cause the optimum size of the population to increase.

For these reasons the conclusions of the last two chapters need modification. Suppose that at the moment the population is greater than the optimum, i.e. that the marginal product of labour is less than the output per head, and that the stock of capital is below the optimum, i.e. that the marginal product of capital is still positive. According to the conclusions of the last two chapters the population should be diminished and the stock of capital increased. But one of these two things *may* in fact be unnecessary. For if the population is diminished, this, as we have just seen, will diminish the optimum size of the capital stock; and it is possible that when the population has been diminished, the existing stock of capital will become so great relatively to the reduced amount of labour that its marginal product is reduced to zero, so that no addition to the capital stock is required. On the other hand, if the stock of capital were increased by saving because at the moment its marginal product is positive, this might, as we have seen, increase the optimum size of the population; and it is possible that the existing population, which at the moment is above the optimum, will itself become the optimum, when the capital stock has been increased sufficiently to reduce its marginal product to zero.

If the population could be varied in amount instantaneously, the conclusions of the last two chapters would be correct without modification. In this case the population should be adjusted at every moment of time to the existing stock of capital, in such a way that the population was of the optimum size relative to that stock of capital, i.e. so that the marginal product of labour was at every point of time equal to the output per head of population; and the capital stock should be increased so long as the marginal product of capital was positive. But even if there were the fullest possible state control over the growth of the population, the working population could not be instantaneously adjusted so

as to be of the optimum size with every different stock of capital goods. The birth-rate cannot be immediately raised or lowered without limit, and the working population is not affected by a change in the birth-rate until the new infants become of working age. It would clearly be absurd, for example, to start a decline in the population now simply because the population was above the present optimum, if the growth in the stock of capital would within ten years cause the present population to be of the optimum size.

There is a certain size of the population and a certain size of the capital stock which together would cause the population and the capital stock to be simultaneously of the optimum sizes, so that, at the same time, the marginal product of labour equalled the output per head and also the marginal product of capital was zero. We may call these the absolute optima of population and capital; and these are the supplies of labour and capital, which in the end are desirable in the community. If we could judge the size of these two absolute optima, we could say for certain that the population should be diminished if the existing population were greater than the absolute optimum, and that the capital stock should be increased if it were below the absolute optimum. If, moreover, we knew how quickly the working population could be changed, it should be possible, with a suitable modification of the argument of pp. 277–80 above, to determine not only in what direction but also at what rate the supply of labour and the supply of capital should be changed. But there is in fact no way by which the size of the absolute optima of labour and capital can be judged. By the means suggested in the last two chapters we can say whether income per head could be increased, either if the population diminished with the given capital stock or if the capital stock increased with the given population. We cannot possibly judge how great the population ought to be if the capital stock were very much greater than it is now, or how great the capital stock should be if the population were much smaller than it is now.

As the best working rule for practice, we must adopt the

conclusions of the last two chapters—namely, that the population should be increased or diminished according as the marginal product of labour is greater than or less than output per head, and that the stock of capital goods should be increased so long as the marginal product of capital is greater than zero. For if this is done the absolute optima of population and capital will eventually be reached, since the supplies of labour and capital will continue to be adjusted until both are simultaneously of the optimum size. The only disadvantage of such a policy is that it may not avoid the wastes (e.g.) of increasing the stock of capital goods now beyond the point which may in the future be necessary when the population has diminished, or of diminishing the population now, although some increase may be found to be necessary when the stock of capital has been increased. The conclusions of the last two chapters may, therefore, provide a working criterion of the direction in which the population or the stock of capital should be changed at any time; but the rates at which the state—in as far as it can control them—should cause the population and the stock of capital goods to change must be determined arbitrarily.

PART V
INTERNATIONAL PROBLEMS

I
THE BALANCE OF PAYMENTS

IN the four preceding Parts we have examined the four fundamental economic questions which must be answered if the standard of living in any economic society is to be as high as possible. But we have discussed these problems on the assumption that the economic system, with which we have been dealing, was a self-contained system with no economic relations with other systems. In this Part we shall see how the arguments of Parts I to IV are affected by making allowance for economic contacts with other states.

All important economic contacts between one country and other countries involve a money payment between the nationals or the government of the one country and the nationals or government of the other countries. Thus, if goods are imported into England or if Englishmen lend to foreigners, Englishmen must pay money to people in other countries. We may, therefore, introduce a study of international economic problems by examining England's Balance of Payments, which is simply a statement of all the payments which Englishmen have made to foreigners and which foreigners have made to Englishmen over a certain period of time. Table X gives a list of the reasons which may give rise to payments between England and other countries. All the items on the left-hand side of Table X represent payments made by foreigners to Englishmen. Thus, if a foreigner buys English goods or gold, uses English ships, comes to England to spend money, makes a gift of money to an Englishman, pays interest on money borrowed from an Englishman, pays tribute to the English government, lends money to Englishmen, or repays a debt to Englishmen, the foreigner must make a money payment to an Englishman. Conversely, all the

elements on the right-hand side of the account represent payments made by Englishmen to foreigners.

If all the items in the Balance of Payments are properly and completely recorded, the total of all the items on the receipts side valued in pounds must be equal to the total of

TABLE X

The Items in England's Balance of Payments

English receipts	*English payments*
(*a*) Value of English commodity exports.	(*a*) Value of English commodity imports.
(*b*) Value of English gold exports.	(*b*) Value of English gold imports.
(*c*) Value of English services (shipping, financial, &c.) sold to foreigners.	(*c*) Value of foreign services (shipping, financial, &c.) used by Englishmen.
(*d*) Expenditure in England by foreign tourists.	(*d*) Expenditure by English tourists abroad.
(*e*) Gifts made by foreigners to Englishmen.	(*e*) Gifts made by Englishmen to foreigners.
(*f*) Interest received by Englishmen on capital invested by them in foreign countries.	(*f*) Interest paid by Englishmen on capital invested by foreigners in England.
(*g*) Interest, capital repayments, tribute, reparations, indemnities received by the English government from foreigners.	(*g*) Interest, capital repayments, tribute, reparations, indemnities paid by the English government to foreigners.
(*h*) Amount borrowed by Englishmen from foreigners (i) on long-term and (ii) on short-term.	(*h*) Amount lent by Englishmen to foreigners (i) on long-term and (ii) on short-term.
(*i*) Repayment by foreigners of sums previously lent by Englishmen.	(*i*) Repayment by Englishmen of sums previously borrowed from foreigners.

all the items on the payments side valued in pounds; the Balance of Payments must balance. This is in reality an obvious but none the less important fact. All the items on the receipts side of the English Balance of Payments represent the purchase of English money, i.e. of pounds, with foreign money, i.e. with dollars, francs, marks, &c. For if a foreigner possessing foreign money has to make a payment to an Englishman, either the foreigner must purchase English money in order to pay the Englishman, or the Englishman

will purchase English money with the foreign money that is paid to him. In either case a payment of money by (e.g.) an American to an Englishman involves the purchase of pounds with dollars. Similarly, a payment by an Englishman to an American involves a purchase of dollars with pounds. But every time a pound is bought with foreign money, some one must be selling that pound to purchase foreign money. Every time, therefore, that a pound is paid to an Englishman by a foreigner, some Englishman must be selling a pound to make a payment of that value to a foreigner, so that the sum of all the receipts items must be equal to the sum of all the payments items in the Balance of Payments over the same period of time. At first sight it may seem astonishing that the Balance of Payments should always balance. Why should the total amount of pounds, which Englishmen wish to sell to foreigners for foreign money, be always equal to the total amount of pounds which foreigners wish to buy with foreign money from Englishmen? In this chapter we shall take it for granted that the Balance of Payments balances—as indeed it clearly must do—and in the next two chapters we shall see by what mechanisms this balance is maintained.

We must next distinguish between the Balance of Trade, the Balance of Payments on Current Account, and the Balance of Payments. A country's Balance of Trade means properly the value of a country's commodity exports minus the value of its commodity imports over a certain period of time (e.g. a year). Its Balance of Trade is said to be positive or 'favourable', if the value of its exports is greater than the value of its imports, and negative or 'unfavourable', if the value of its imports exceeds the value of its exports. Thus, if in any year England exports goods worth £500 millions and imports goods worth £900 millions, England has an unfavourable or negative Balance of Trade of £400 millions in the course of the year. A country's Balance of Trade need not balance. If, for example, England is importing £400 millions more goods than she is exporting but is receiving interest payments from foreigners of £400 millions in the year, England's Balance of

Payments will balance, although she has a negative or unfavourable Balance of Trade. By a country's Balance of Payments on Current Account is meant the value of all the payments made to the country for all current purposes such as the purchase of that country's goods, the payment of interest to it, the use of its shipping services, &c.—i.e. all the receipts items in Table X except items (*h*) and (*i*)—minus all the payments made to the foreigners for current purposes, which include all the payment items in Table X except items (*h*) and (*i*). Thus, a country's Balance of Payments on Current Account measures the total amount which is available for that country to lend abroad or to use to reduce its indebtedness to foreigners, and is said to be favourable or positive if the country in question is on balance lending money abroad or reducing its existing indebtedness to foreigners, and is unfavourable or negative if on balance it is borrowing from abroad.

These distinctions can be made clear if we take a simple example. It will be clear from Table X that all the items in the Balance of Payments are not equally important. We will suppose for illustration that between England and other countries there are no payments except for trade in commodities, for shipping and financial services, for interest payments, and for lending or the repayment of past borrowing. Then we can draw up a simplified Balance of Payments, as in Table XI, in which we have given money values to the different items for the purposes of illustration.

In Table XI the Balance of Payments balances at £1,080 millions. But England has exported goods to the value of only £500 millions and has imported £800 millions worth of goods, so that England's Balance of Trade is negative or unfavourable to the amount of £300 millions. Against this England has received £480 millions for other current purposes (i.e. £150 millions in payment for shipping and financial services and £330 millions in interest from foreigners). On the other hand, England has £80 millions to pay to foreigners for other current purposes (i.e. £50 millions for the use of foreign

services and £30 millions in interest to foreigners). In other words, England has an unfavourable Balance of Trade of £300 millions but from other current payments has received a net amount of £400 millions; therefore, she has a favourable Balance of Payments on Current Account of £100 millions, which represents the net amount of money which England

TABLE XI

Illustration of Main Items in Balance of Payments

English receipts	£ *millions*	*English payments*	£ *millions*
1. Commodity exports	500	6. Commodity imports	800
2. Shipping and financial services sold to foreigners	150	7. Foreign shipping and financial services bought by Englishmen	50
3. Interest paid by foreigners to Englishmen	330	8. Interest paid by Englishmen to foreigners	30
4. Amount borrowed from abroad	40	9. Amount lent by Englishmen to foreigners	190
5. Repayment by foreigners of sums previously lent to them	60	10. Repayment by Englishmen of money previously borrowed from foreigners	10
	£1,080		£1,080

has available to add to her foreign investments in the course of the year. From items 9 and 10 in Table XI we see that she has lent £190 millions abroad and has repaid £10 millions of money which she has in the past borrowed from foreigners, but from items 4 and 5 we see that she has borrowed £40 millions from foreigners and that foreigners have repaid £60 millions of past borrowings, so that the figure of £100 millions (i.e. 190+10—40—60) represents the net amount of England's foreign lending in the year. To sum up, England's Balance of Payments balances at £1,080 millions, she has an unfavourable Balance of Trade of £300 millions, but she has a favourable Balance of Payments on Current Account of £100 millions, which represents the net amount which she is enabled to lend abroad in the course of the year.

The figures of Table XI are represented in a simpler

manner in Table XII. If we compare items 1 and 6 of Table XI, we see that England spent £800 millions on imports and received £500 millions for her exports, so that her trade in commodities left a net balance of payments to be made for imported goods of £300 millions; and in Table XII this net figure is shown in item 3. If next we compare items 2 and 7

TABLE XII

Alternative Method of illustrating the Balance of Payments

English receipts	£ *millions*	*English payments*	£ *millions*
1. Net receipts from shipping and financial services	100	3. Net excess of imports over exports, or unfavourable Balance of Trade	300
2. Net receipts of interest from abroad	300	4. Net amount lent abroad in the course of the year	100
	£400		£400

of Table XI we see that England spent £50 millions on foreign services but received £150 millions from foreigners for her services, so that England had a net figure of £100 millions to receive from foreigners for services. This net figure is shown in item 1 of Table XII. Similarly, by comparing items 3 and 8 of Table XI we see that England received a net balance of interest from foreigners of £300 millions, which is shown in item 2 of Table XII. And by comparing items 4 and 5 with items 9 and 10 of Table XI we see that England lent abroad a net amount of £100 millions, in the course of the year, which is shown in item 4 of Table XII. Table XII expresses the same facts as Table XI, but shows only the net balance of receipts or payments under each head of commodity trade, services, interest, and lending.

In order to discuss in the next two chapters the mechanism which ensures that a country's Balance of Payments balances, we must outline the factors which determine the size of the different items in a country's Balance of Payments. In Table XII there are four different items to be discussed:

(a) the net value of the excess of a country's imports over her exports;
(b) the net value of a country's receipts from shipping and other services;
(c) the net amount of interest payments received by a country from foreign countries; and
(d) the net amount lent by one country to others.

(a) Let us first consider the factors determining the value of England's exports. A fall in the price in pounds of English exportable goods will in itself almost certainly increase the total value of English exports. If the price of English machines falls, foreigners will certainly buy more English machines, both because they will want more machines when their price falls, and also because they will buy English machines instead of machines made in other countries in which the price has not fallen. It is not quite certain, however, that the total value of English exports of machines will rise. Suppose that England is exporting 100 machines at £100 each, and that the price of English machines then falls to £80. If in consequence England exports 150 instead of 100 machines, the value of her machine exports will rise from £10,000 (= 100×£100) to £12,000 (= 150×£80). But if English exports rose only to 120 machines, then the value of her machine exports would fall from £10,000 (= 100×£100) to £9,600 (= 120×£80). But since the exports of any one country will probably compete with similar goods produced in many other countries, it is probable that when the price of a single country's exports falls there will be a relatively large increase in the amount sold, because the lowered price will enable them to compete better in many markets. For this reason the total value of English exports is likely to rise in consequence of a fall in the price of her exportable goods. We may take this as the normal result of a fall in the home price of any country's exportable goods.

The price of English exports in foreign markets may, however, fall, not because the price of the English goods expressed in pounds falls, but because the value of the pound itself

depreciates in terms of other foreign currencies. When the rate of exchange between the pound and the dollar is £1 to $5, an American must give $5 to purchase £1. If for one reason or another the pound depreciates in value in terms of dollars and is worth only $4½ instead of $5, then the American will have to give only $4½ instead of $5 to purchase £1; and this means that the American will have to give only $450 instead of $500 in order to buy an English machine costing £100. A depreciation in the value of the pound in terms of the dollar itself lowers the price of English exports in terms of American prices and will, therefore, if other conditions are unchanged, cause the Americans to buy more English machines. In these circumstances, since the price in pounds of English machines has not changed, the value of English exports measured in pounds will certainly be increased.

A rise in the foreign price of foreign goods comparable to English export goods will cause a rise in the value of English exports. A rise in the price in dollars of American machines will cause Americans to buy more English machines, if the price of English machines has not risen and if the rate of exchange between the pound and the dollar has not changed, because it will become cheaper to buy in England rather than in America.

A rise in money incomes in foreign countries will in itself cause a rise in the value of English exports. If Americans for one reason or another have larger dollar incomes to spend, they will spend more on all commodities and will probably, therefore, purchase more English goods as well as more American goods.

Finally, the value of English exports depends upon the tariffs, quotas, prohibitions, or other restrictions placed in foreign countries on the import of English goods. A reduction in tariffs, or a diminution in other legal restrictions, imposed on the import of English goods into America will increase the value of English exports, if other conditions do not alter at the same time.

The value of English imports is determined by the same factors as the value of her exports, if we substitute 'foreign' for 'English' and 'English' for 'foreign' throughout our discussion of the factors determining the value of English exports. Thus the value of English imports will be increased (i) by a fall in the foreign price of foreign exportable goods, (ii) by an appreciation in the value of English money in terms of foreign money, since a rise in the amount of dollars obtainable for a pound will cause a fall in the English price of American goods, (iii) by a rise in the price of English goods, (iv) by a rise in English money incomes, and (v) by a reduction of the legal restrictions placed on the import of goods into England. We may therefore conclude that the value of the excess of a country's imports over her exports will be increased (i) by a rise in her prices compared with foreign prices, (ii) by an appreciation in the value of her money in terms of foreign money, (iii) by a rise in her money income compared with foreign money incomes, and (iv) by a reduction in her tariffs compared with foreign tariffs.

(**b**) A country's net receipts from shipping and other services will depend upon similar considerations. A fall in the English price of such services (e.g. in the shipping freights and charges made by English shipping firms), or a rise in the foreign price of such services, will increase foreign expenditure on English services, and diminish English expenditure on foreign services. Both Englishmen and foreigners will use the English services which have become cheaper rather than similar foreign services which have become dearer. A depreciation of the value of the pound in terms of foreign money will increase the price in England of foreign services, since more pounds have to be paid to obtain a given amount of foreign money, and will decrease the price of English services in foreign countries, since more pounds can be obtained for a given amount of foreign money. A depreciation of the value of the pound in terms of foreign money will therefore increase the value of English services sold abroad and will diminish English expenditure on foreign

services. A fall in English incomes, which will diminish English expenditure on all goods, will among other things diminish the English demand for foreign services; and a rise in foreign incomes, which will increase the foreign demand for all goods and services, will increase the foreign demand for English services among other things. The net value of a country's receipts from shipping and other services will therefore be increased, (i) by a fall in her prices compared with foreign prices for the services, (ii) by a depreciation in the value of her currency in terms of foreign currencies, and (iii) by a fall in her money incomes compared with foreign money incomes.

(c) The net amount of interest payment received by a country will depend upon the following conditions: (i) the amount of capital which the country in question has lent abroad in the past, (ii) whether this money has been lent at fixed interest or whether the payment of interest on it depends upon the profits earned by the concern in which the money is invested, and (iii) whether any fixed interest which is to be paid on past loans is fixed in terms of the money of the country receiving interest or in terms of the money of the country paying interest.

It is clear that the net amount of interest which a country receives from abroad will depend mainly upon the amount lent abroad in the past and the rate of interest at which it was lent. But to some extent its receipts of interest from abroad will depend upon present conditions at home and in foreign countries.

If Englishmen have lent money to American industries or to American municipalities at fixed rates of interest, the prosperity of American business will have no effect upon the amount of interest received by English people on these loans, except in so far as a depression in American business may drive American industries or municipalities into bankruptcy. But if the English people have invested the funds in American business in ordinary shares or equities, then a rise in American money incomes, and therefore in the profits earned by

American industry, will increase the amount of interest received by Englishmen from America.

A depreciation of the value of the pound in terms of foreign money will increase the amount of pounds received by Englishmen in interest on past foreign investment, if these past investments take the form of loans to foreigners yielding interest or profit fixed in terms of foreign money. For if the value of £1 depreciates from $5 to $4, the payment of $5 in interest or profit to Englishmen will mean the receipt of £1 5*s*. instead of £1, since $5 will purchase £1 5*s*. at a rate of exchange of $4 to £1. But if Englishmen have lent money to foreigners at interest fixed in terms of pounds, a change in the value of the pound in terms of foreign money will have no effect upon the amount of pounds received by Englishmen.

To sum up, the net amount of interest received by a country will depend in the main upon the amount which it has lent abroad or borrowed from abroad in the past, and the rates of interest at which it has borrowed or lent. But a rise in money profits at home may increase a country's payment of profit to foreigners and so may reduce its net receipt of interest from abroad. A rise in foreign money profits will increase its net receipt of interest from abroad, in so far as the country in question has in the past invested in foreign ordinary shares. A depreciation of a country's money in terms of foreign money will raise its net receipt of interest from abroad in terms of its own currency, in so far as it receives interest or profit fixed in terms of foreign money, but will reduce its net receipt of interest from abroad, in so far as it owes to foreigners interest fixed in terms of foreign money.

(d) Finally, we must consider the factors which determine the net amount which a country lends abroad. The net amount lent abroad by England is equal to the gross amount lent by Englishmen to foreigners, plus the repayment by Englishmen of their indebtedness to foreigners, minus the gross amount borrowed by Englishmen from foreigners, minus the repayment by foreigners of their indebtedness to

Englishmen. The gross amount lent abroad by Englishmen must include all the pounds with which Englishmen purchase foreign money for the purpose of increasing their holding of capital in foreign countries. This figure includes the amount lent on long term to foreign governments, municipalities, or businesses, whether the foreign securities bought are newly issued securities or whether they are existing foreign securities, which are bought by Englishmen from foreigners. It includes the amount spent by Englishmen on the purchase of land or buildings in foreign countries, on the purchase of short-term foreign securities, and on the purchase of foreign money to deposit in foreign banks or to hold as a capital asset in the form of notes or coins. The amount of capital which Englishmen repay to foreigners must include all purchases by Englishmen of indebtedness of Englishmen to foreigners, and includes, therefore, the amount of existing English securities and money, which are owned by foreigners and bought from them to be held by Englishmen, as well as the actual amount of any money debt repaid by an Englishman to a foreigner. Conversely, the amount of foreign lending to England must include all the purchase of pounds by foreigners for the purpose of increasing their holding of capital in any form—securities, land, buildings, bank deposits, or cash—in England; and the amount of capital repaid by foreigners must include the total amount of foreign property—securities, land, or money—which is in the ownership of Englishmen and which is bought back from them by foreigners.

A fall in interest rates in England and a rise in interest rates abroad will increase England's net lending abroad, because it becomes more profitable to lend money abroad rather than in England.

The net amount lent abroad is also increased by an expectation that the profitability of English industry will in the future fall or that the profitability of foreign industry will rise. For people will wish to sell English ordinary shares, the dividends on which are expected to fall and the capital value

of which will also fall as profits fall, in order to purchase foreign assets, the profits from which and the capital value of which are expected to rise.

An expectation that the value of the pound will depreciate in terms of foreign money will cause the net amount lent abroad by English people to increase. If the pound depreciates in terms of foreign money, the yield in terms of pounds on a foreign asset bought before the depreciation takes place will be greater than the yield on the foreign assets reckoned in terms of foreign money. For example, suppose that the rate of interest both in England and America is 5 per cent., and that the pound is expected to depreciate from $5 to $4. If £100 is invested in England, £5 per annum can be obtained in interest. But this £100 might be used to purchase $500, which invested at 5 per cent. in America would bring in $25 per annum. If subsequently, as is expected, the pound depreciates from $5 to $4, these $25 will purchase £6 5*s*. In other words, though the rate of interest both in England and in America is 5 per cent., the investment of £100 in England will yield 5 per cent., whereas the immediate investment of this sum in America together with the subsequent depreciation in the pound will bring in a yield of 6¼ per cent. on the £100. The expectation of high yields from long-term foreign lending due to the expectation that the pound will depreciate in terms of foreign money is important, only if the pound is expected not merely to depreciate but also to remain for a long time at the depreciated value. For if the pound depreciates in value from $5 to $4 for a short time and then rises again in value to $5, the yield from foreign investment will not be raised in any significant way. For as soon as the pound appreciated in value again to $5, the interest of $25 on the foreign investment will yield only £5 or 5 per cent. on the foreign investment of the £100.

But short-term foreign investment will be increased by the expectation that the pound will depreciate, even if the depreciation is expected to be only temporary. An Englishman can purchase $500 by the investment of £100 in

American money, if the rate of exchange is $5 for £1; if subsequently the rate of exchange moves to $4 for £1, these $500 will be sufficient to purchase £125. Even, therefore, if little or no interest is gained on the money in America, because it is held in American cash or on deposit at an American bank, the Englishman by purchasing £100 worth of dollars at $5 to the £1 and by waiting to repurchase pounds at $4 to £1, can make a profit of 25 per cent. on the original £100. And if he purchases dollars just before the pound depreciates and then sells dollars for pounds, he may make this 25 per cent. in a very short time.

Finally, the net amount lent abroad depends on the size of money incomes at home and abroad. If Englishmen have larger money incomes from which they can save, they will probably lend more in England and more abroad. Conversely, a fall in foreign incomes will decrease the amount which foreigners have to lend, and they will probably lend somewhat less to England. Consequently, the net amount lent abroad by England will be increased by a rise in English incomes and a fall in foreign incomes.

To summarize, the net amount lent abroad by any one country will be increased,

(i) by a rise in the rate of interest abroad or by a fall in the rate of interest at home;

(ii) by an expectation that foreign profits will rise or home profits fall;

(iii) by an expectation that the value of the home money will depreciate in terms of foreign money; and

(iv) by a rise in home incomes or a fall in foreign incomes, from which savings can be made.

II

THE GOLD STANDARD

IN the last chapter we showed that the Balance of Payments must always balance in the sense that the total amount of pounds used to purchase foreign money must always be equal to the total amount of pounds bought by foreigners with foreign money; in this and the following chapter we shall show by what monetary mechanism this balance is maintained.

There are two distinct methods of adjustment of the Balance of Payments, the first of which operates when the countries in question are all on a common monetary standard, and the second when the countries are on independent monetary standards. The most important common monetary standard is the Gold Standard, which we shall discuss to illustrate the operation of an international standard. The reader can himself apply the argument to any other international monetary standard (e.g. a Silver Standard), since the principles of operation are the same, whatever that standard may be.

A number of countries are on an effective Gold Standard, only if the value of the currency of each country is fixed, within narrow limits, in terms of the currency of any other country on the gold standard. For this to be so two conditions must be fulfilled. First, the price of gold in terms of the money of each country must be fixed within narrow limits. Secondly, there must be freedom of movement of gold between the different countries on the gold standard. We will discuss these two conditions in turn, and will start by describing the three possible devices, by which the price of gold may be fixed in terms of a country's money.

(i) The price of gold in terms of a country's money will be fixed, if the legal money of that country consists of gold coins of a certain weight. In this case the government office, which is responsible for the coining of gold, must always be

willing to coin a fixed weight of gold into a certain number of gold coins of a fixed value in terms of the country's money; and at the same time individuals must be free to melt these gold coins or to export them for the purpose of melting them. Thus, before 1914 the legal money of England was the gold sovereign or gold pound coin. The English Mint was under an obligation to coin an ounce of gold, whenever presented for this purpose, into a fixed amount of gold sovereigns, and people were free to melt gold sovereigns into gold bars or bullion. The fixed rate at which the Mint was legally obliged to coin gold was 1 ounce of gold to £3 17*s.* 10½*d.* By this means the value of an ounce of gold was prevented from moving appreciably above or below £3 17*s.* 10½*d.* The market price of an ounce of gold could not rise to £3 18*s.*, because people could always obtain an ounce of gold by melting down £3 17*s.* 10½*d.* worth of gold sovereigns. Similarly, the market price of an ounce of gold could not fall appreciably below £3 17*s.* 10½*d.*, because people could always get the Mint to coin an ounce of gold into £3 17*s.* 10½*d.* worth of gold coin. There were, however, certain expenses involved in having gold minted into gold sovereigns. Since the minting of gold took time, there was some loss of interest involved in bringing gold to the Mint. Interest could have been earned on this money if it had been invested for this time in other ways. For this reason, although an ounce of gold was always freely minted into £3 17*s.* 10½*d.* of gold coins, it did not pay people to buy gold in the market and to have it minted into coin until the market price of an ounce of gold had fallen to £3 17*s.* 9*d.* or under. In consequence, the market price of an ounce of gold could not fall below £3 17*s.* 9*d.*, and could not rise above £3 17*s.* 10½*d.* When the price of gold is fixed in terms of a country's money by these means, the country is said to be on a Gold Specie Standard.

(ii) But the price of gold in terms of a country's money may be fixed without the use of gold coins. Between 1925 and 1931 the price of gold in terms of pounds was fixed, although there were no gold coins in circulation. The Bank

of England was legally obliged to buy gold for pound notes from any one who wished to sell gold to it at a fixed price of £3 17*s.* 9*d.* per ounce, and to sell gold for pound notes to any one who wanted gold at a fixed price of £3 17*s.* 10½*d.* The price of gold in the market could not rise above £3 17*s.* 10½*d.* because people could always buy gold from the Bank of England at this price; and the market price of gold could not fall below £3 17*s.* 9*d.* an ounce, because people could always sell gold to the Bank of England at this price. When the price of gold in terms of a country's money is fixed by these means the country is said to be on a Gold Bullion Standard; for the price of gold bullion (i.e. of gold in an uncoined form) is fixed in terms of the country's money.

(iii) There is a third way in which the price of gold may be fixed. If the Central Bank of a country is under an obligation to buy and sell the notes of some second country, which is on a gold specie or gold bullion standard, at a price fixed in terms of its own notes, then the price of gold is indirectly fixed in terms of the money of the first country. Suppose that England is on a gold bullion standard, so that the pound note is always worth a fixed amount of gold. If the German Central Bank is under an obligation to buy and sell English pound notes at a fixed price for mark notes, the price of pound notes will be fixed in terms of marks. Indirectly, therefore, the price of gold will be fixed in terms of marks. Even if there were no gold in any form in Germany, the German Central Bank by holding a reserve of pound notes—or of deposits in England which give it a claim to pound notes—could fix the price of gold in terms of marks by this means. When a country fixes the price of gold in terms of its own money in this way, it is said to be on the Gold Exchange Standard. It has fixed the value of its own money in terms of gold by fixing the rate of exchange between its own and some other money, which in turn has a fixed value in terms of gold.

If, by operating gold specie, gold bullion, or gold exchange standards, both of two countries fix the price of gold in terms

of their own money, and if there is freedom of export and import of gold in both countries, the rate of exchange between the money of the two countries will be fixed within narrow limits. Suppose, for example, that both England and America are on the gold standard and that the price of a certain amount of gold is fixed in England at £1, and that the price of the same amount of gold is fixed in America at $5. Then the par rate of exchange between the pound and the dollar is said to be £1 to $5.[1] If the pound appreciates in value in terms of dollars considerably above the par rate of exchange—if, for example, the pound becomes worth $5½ instead of $5—Englishmen will find it profitable to purchase dollar notes with pound notes, in order to buy gold in America at the fixed price in dollars and to ship it to England to sell at the fixed price in pounds. For with £1 in notes they can buy $5½ notes, and with $5 of these notes they can purchase a certain amount of gold in America, which they can sell to the Bank of England for £1. Thus on each such transaction they make a profit of $½. On the other hand, no Americans with dollar notes would be willing to purchase pound notes at $5½ for £1; for they could obtain pounds more cheaply by buying $5 worth of gold in America and selling it in England for £1. For these reasons if the rate of exchange was £1 for $5½, Englishmen would want to buy dollar notes with pound notes in order to ship gold from America to England, while no Americans would be willing to purchase pound notes with dollar notes, but would make their payments in England by shipping gold. The demand for dollar notes with pound notes would be great and there would be no demand for pound notes with dollar notes, so that the amount of dollar notes which could be obtained for

[1] As a matter of fact the par rate of exchange between the pound and the dollar both before 1914 and between 1925 and 1931, when both countries were on the gold standard, was £1 to $4·866. In other words the amount of gold which in England was bought and sold by the Bank of England for £1 was bought and sold by the Federal Reserve Banks in America at the fixed price of $4·866. The par rate of exchange of £1 to $5 is chosen in the text in order to simplify the illustration.

a pound note would necessarily fall from $5\frac{1}{2}$ towards $5, and the rate of exchange between the pound and dollar would approach the par rate again.

Conversely, if for any reason the value of the pound were to depreciate in terms of the dollar from the par rate of £1 for $5 to £1 for $4\frac{1}{2}$, it would pay people to send gold from England to America. Englishmen with payments to make in America would purchase gold from the Bank of England for £1 and would sell this gold to the American banks at the fixed price of $5, rather than give a £1 note directly in exchange for only $4\frac{1}{2}$ in notes. At the same time Americans with $4\frac{1}{2}$ in notes would purchase a £1 note and with that would buy gold from the Bank of England, export it to America, and sell it at the fixed price of $5, making a profit of $\frac{1}{2}$ on each such transaction. The demand for pound notes with dollar notes would be great, while no one with pound notes would purchase dollar notes directly at this rate. In consequence, more dollar notes would have to be given to obtain a pound note, and the rate of exchange between the pound note and the dollar note would move from $4\frac{1}{2}$ for £1 towards the par rate of $5 for £1.

If there were no cost involved in shipping gold between England and America and if the price of gold were rigidly fixed in terms of English money and American money, the rate of exchange between the pound and the dollar could not alter at all from the par rate of £1 to $5. For no one with dollars would ever offer more than $5 for £1, since they could obtain £1 by shipping $5 worth of gold to England; and no one with pounds would accept less than $5 per £1, since they can obtain $5 by shipping £1 worth of gold to America. But the shipment of gold between America and England involves a certain cost, and because of this cost the actual rate of exchange between the dollar and pound can fluctuate within limits set by the cost of moving gold, even if both countries are on the gold standard. The cost of shipping gold consists in the freight charged by the shipping company, the insurance of the gold against loss at sea, and the interest which is lost

by using money to ship gold. It takes time to move gold from London to New York, and if a man therefore buys £100 worth of gold to ship to New York, he loses the interest which he could have obtained on the £100 if he had invested this money for the time in an interest-bearing security. Suppose that it costs 2 cents to ship between England and America that amount of gold which sells in England at the fixed price of £1 and in America at the fixed price of $5. In these circumstances it will not pay to ship gold from England to America until the pound has depreciated to £1 for $4·98 or less. For an Englishman would be willing to accept anything above $4·98 in direct exchange for a £1 note rather than bear the cost of shipping £1 in gold to America to obtain $5. Similarly, it will not pay to ship gold from America to England until the pound has appreciated to £1 for $5·02 or more. At this point the rate of exchange between the pound and dollar is said to have reached the English Gold Import Point or the American Gold Export Point. As soon as the rate of exchange is £1 for anything less than $4·98, it is said to have reached the English Gold Export Point or the American Gold Import Point, since at this point it becomes profitable to ship gold from England to America.

We can now show how it is ensured that the Balance of Payments balances when all countries are on the gold standard. If the total amount of payments which Englishmen wish to make to foreigners is equal to the total amount of payments which foreigners want to make to Englishmen, there is no difficulty in arranging for these payments. There are a number of technical methods of making these payments; but the principle involved is the same. We may assume that there are a number of foreign exchange dealers, who are individuals or bankers holding a certain amount of pounds on deposit with English banks and a certain amount of foreign currencies on deposit with foreign banks. If an Englishman with pounds wishes to make a payment to an American, the exchange dealers will give the Englishman some of their dollars deposited in American banks in ex-

change for deposits in an English bank paid to them by the Englishman. But at the same time Americans, who wish to make payments to English people, will be giving the exchange dealers dollar deposits in exchange for some of the exchange dealers' holding of pounds on deposit in English banks. If, at the current rate of exchange, the amount of pounds which Americans wish to purchase from exchange dealers are equal to the number of pounds which English people want to exchange into dollars, the total amount of pounds held by exchange dealers on deposit with English banks and the total amount of dollars held by them on deposit in American banks will not alter.

But suppose now that Englishmen for some reason or another—e.g. because the Englishman's desire for American goods increases—wish to pay £10 millions more a week to Americans than Americans wish to pay to Englishmen. At the current rate of exchange between the pound and the dollar the exchange dealers are receiving £10 millions more a week from Englishmen than they are selling to Americans, and at a rate of exchange of $5 for £1 are paying out $50 millions a week more to Englishmen than they are receiving from Americans. The pound deposits of the exchange dealers in English banks are therefore rising by £10 millions a week and their dollar deposits with American banks are falling by $50 millions a week. As long as this continues the exchange dealers themselves are exchanging their capital from American money to English money, which represents a capital movement or loan of £10 millions a week from America to England. The Balance of Payments still balances; English commodity imports have gone up by £10 millions a week, but against this there is an additional lending of £10 millions a week from American money to English money.

If Englishmen continue to spend £10 millions a week more on imports, the exchange dealers would soon have no more dollar deposits to pay out and would hold all their balances in the form of pounds deposited with English banks. In order to stop people buying so many dollars with pounds

they will reduce the number of dollars which they will give for a pound. In other words the pound will depreciate in value in terms of the dollar. The exchange dealers will, for example, offer $4·98 instead of $5 for a pound. But if both countries are on the gold standard, a small depreciation of the pound will make it cheaper for English people, who have payments to make in America, to ship gold to America rather than to continue to buy dollars directly from exchange dealers with pounds. As soon as the pound has depreciated sufficiently to make Englishmen purchase £10 millions a week of gold from the Bank of England to make their payments in America, the exchange dealers' receipts and payments of pounds and their receipts and payments of dollars will balance again, so that their balances held in dollars will cease to diminish. There will now appear a new item in the Balance of Payments, namely an export of £10 millions worth of gold a week from England, which is being sold in America for dollars. The Balance of Payments will still balance. Against the additional commodity imports of £10 millions a week is now an export of gold of £10 millions a week, which takes the place of the additional lending of £10 millions a week from American to English money.

But this state of affairs is also only temporary. For as long as it continues England must be exporting £10 millions of gold a week, which is being purchased by Englishmen from the Bank of England. If, however, England is to stay on the gold standard, this drain of gold must be stopped. The Bank of England cannot for ever pay out gold at a fixed price for pounds, since its gold reserves must sooner or later be used up. We have already seen in Part I, Chapter III (p. 24), that, if people cash part of their deposits with the ordinary joint-stock banks, the cash reserve ratio of these banks will be reduced, and that in order to prevent this fall in their cash reserve ratio the banks will be obliged to sell securities and raise interest rates in order to diminish their deposit liabilities. An export of gold from England will have the same effect. If Englishmen find it profitable to purchase gold

from the Bank of England, this must cause the cash reserves of the joint-stock banks to fall. If customers of these banks change their deposits into notes, in order with the notes to purchase gold from the Bank of England, this will automatically reduce the cash held by the joint-stock banks in the form of notes. If, however, the exporters of gold purchase gold from the Bank of England by means of a cheque drawn on their deposits with a joint-stock bank, then the joint-stock bank will pay the Bank of England for their customers' purchase of gold by using up part of its deposit balance with the Bank of England. But as we have seen (p. 19) the joint-stock banks count their deposits with the Bank of England as part of their cash reserves, so that their cash reserves will be reduced. The consequence of the gold export is, therefore, that the banks must sell securities and raise interest rates, in order to preserve their cash reserve ratio.

This rise in interest rates will, as we have argued in Chapters II and III of Part I, cause money incomes and money prices to fall in England, since Englishmen will be less willing to borrow money to spend on capital development at the higher rates of interest. This reduction in English money incomes and prices will cause English imports to fall off and English exports to rise, since people will now prefer the cheaper English goods to foreign goods and since Englishmen will have smaller incomes to spend on imports. Moreover, the fall in English incomes from which savings can be made together with the rise in the rate of interest in England will cause a reduction in England's net lending abroad. At the same time gold will be imported and sold to the Central Banks of the foreign countries. The reserves of the foreign banks will be increased by the import of gold just as the reserves of English banks are diminished by the export of gold, and the foreign banks will be able to lower their interest rates and purchase securities, in order to increase their deposit liabilities. In consequence the rate of interest will fall in foreign countries as it rises in England, and prices and money incomes will rise in foreign countries as they fall

in England. This provides a further reason why English exports should rise and her imports fall, and why the net amount lent abroad by England should fall off.

As the export of gold continues, the rate of interest in England rises and falls in foreign countries, while English money incomes and prices fall and foreign money incomes and prices rise. When the consequent rise in English exports, the fall in her imports, and the diminution in her net lending abroad have together become as great as the original increase in her demand for imports, which first caused the export of gold, then the normal payments of Englishmen to foreigners and of foreigners to Englishmen will balance again. The Balance of Payments will be in a new equilibrium, and the export of gold from England will cease.

We have illustrated the operation of the gold standard by supposing that a country's demand for imports increases, leading to a loss of gold by that country; but from our discussion of the Balance of Payments it follows that any change, which increases the payments which it must make to foreigners or reduces the payments which foreigners must make to it, will cause a country to lose gold. The following are therefore the most important reasons why a country may lose gold:

1. A country which is on the gold standard will lose gold if there is a fall in money prices and incomes abroad unaccompanied by a similar slump in money prices and incomes at home, or if there is a rise in money incomes and prices at home unaccompanied by a similar rise in other countries.

Let us suppose that there is a world-wide slump in money prices and incomes, causing prices everywhere to fall below costs of production and so leading to unemployment in all countries, but that England by adopting the policies suggested in Part I prevents the growth of unemployment through banking action designed to reduce interest rates, through public works expenditure, and through measures designed to stimulate directly the expenditure of money by consumers on consumption goods. The rise in English money incomes

and prices relatively to money incomes and prices in foreign countries will, as we have seen, cause English imports to rise and her exports to fall, so that England will lose gold. There are two further reasons why in these circumstances England is likely to lose gold. First, if in England the rate of interest is being deliberately lowered by the banks to prevent unemployment, while the slump in money prices and incomes is continuing abroad unchecked by any similar deliberate reduction in interest rates, it will become more profitable to lend money abroad, since the rate of interest in England has fallen relatively to interest rates in other countries. For this reason England's net lending abroad will rise, which will further increase the payments to be made by England to foreign countries and so intensify the loss of gold by England. Secondly, as the slump develops in foreign countries Englishmen's receipts of dividend and interest from past investments in foreign countries will fall. For industries in foreign countries will become less profitable, and will pay lower dividends. If the slump in money incomes and prices abroad goes far enough, foreign businesses, municipalities, and governments may be driven into bankruptcy and so default on their payments of interest on fixed-interest securities. In as far as Englishmen have invested in such securities, England's receipt of dividends and interest from abroad will fall, which will increase the flow of gold from England.

2. If there is a rise in foreign tariffs or other legal restrictions placed upon the import of English goods, the value of English exports will fall; and this will cause an export of gold from England.

3. If the productivity of labour and other factors of production increases in other countries more rapidly than in England in the production of commodities, which compete with English products either in the English market or in foreign markets, the cost and so the price of such foreign goods will fall more rapidly than the English price of similar goods. This will cause a fall in English exports or a rise in her imports which will lead to a loss of gold by England.

4. If the taste of consumers in England or in other countries change so that they prefer the type of goods produced in foreign countries, England will lose gold because her imports will rise or her exports fall off.

5. The imposition of a tribute, indemnity, or reparations to be paid by England to other countries would cause an increase in the amount of payments to be made by England to other countries, and would so cause England to lose gold.

6. An increase in the desire of Englishmen to lend money abroad, by causing an increase in the payments of money to be made to other countries, would lead to an export of gold by England. An important new invention abroad or the opening up of an undeveloped territory might cause Englishmen to expect abnormally large profits on money lent abroad to finance these new developments. Greater political security in other countries and a diminished sense of security in England, by increasing the safety of capital held abroad relatively to capital held in England, would cause a rise in England's net lending abroad.

Any of these things may cause a country to lose gold. We have already shown that a drain of gold from one country can be stopped only if the country losing gold allows its interest rates to rise and its money prices and incomes to fall, and if the countries importing gold adopt monetary policies designed to lower their rates of interest and raise their money prices and incomes. There is, however, no reason to believe that the monetary policy which a country must adopt in order to operate the gold standard will be the same as the monetary policy, which is appropriate on the principles outlined in Part I, to preserve a high level of employment. For money prices and incomes may fall in foreign countries, or foreign countries may raise their tariffs, at a time when unemployment is appearing at home. In these circumstances deflation of money prices and incomes is necessary to prevent an export of gold and so to maintain the gold standard, while an inflation of money prices and incomes is appropriate to prevent unemployment.

There is one way in which this conflict between the two appropriate monetary policies might be resolved. We saw in Chapter VII of Part I that it is the relationship between the money wage-rate on the one hand and the level of money incomes and prices on the other, which determines the volume of employment. Unemployment can be reduced if money wage-rates are reduced relatively to money prices, since this will reduce the real wage-rate. If there is sufficient flexibility in the money wage-rate, there need be no conflict between the monetary policy designed to maintain full employment and that designed to maintain the gold standard. If, for example, a country lost gold at a time when unemployment was appearing at home, the loss of gold could be stopped by monetary action designed to reduce money incomes and prices; but this deflation would be compatible with a simultaneous reduction in unemployment, if the money wage-rate was reduced more quickly than the reduction in money incomes and prices. If money wage-rates always fell quickly so long as there was unemployment, the monetary authorities could concentrate on controlling the level of money incomes and prices in such a way that there was no import or export of gold, while the money wage-rate automatically adjusted itself to this level of money prices in such a way as to preserve full employment.

This is a possible solution of the conflict between monetary policies designed to preserve internal and external equilibrium; but it is not necessarily the best solution. For in a country in which there are important blocks of indebtedness fixed in terms of money, an extensive and rapid fall in prices and incomes will greatly increase the real value of these debts. If, in order to stay on the gold standard, a country with a large internal government debt lowers its money incomes, prices, and wage-rates, it will be necessary to raise the rates of taxation to meet the interest on its fixed debt; for as its money incomes fall, the tax revenue raised by the existing rate of taxation will fall, while the fixed amount to be paid by the government in interest on debt will remain unchanged.

But, in fact, money wage-rates in most communities cannot

be very rapidly and extensively altered. This is particularly true of a country in which many wage-rates are fixed for long periods of time either by bargain between employers' and workers' associations or by official wage boards. In such circumstances any *rapid* adjustment of money wage-rates must be ruled out as a possible solution of our problem. It will, in these circumstances, be possible to operate a gold standard successfully without causing unemployment only if the necessity for large or rapid adjustments of money prices and money wage-rates can be avoided. For this reason there are six important conditions which must be fulfilled if the gold standard is to be operated successfully in modern conditions.

1. The most essential is that the important countries on the gold standard should adopt internal policies, designed on the lines discussed in Part I, to prevent violent fluctuations in money incomes and prices. If all countries were consciously and successfully adopting internal policies to prevent serious slumps in money prices and incomes, no one of them will be faced with a sudden slump in the demand for its exports due to a fall in incomes and prices in other countries. The main reason for rapid internal deflation to preserve the gold standard will be removed. Agreement among the major countries that they will all lower interest rates, expand the volume of money, spend more on public works, and stimulate consumers' expenditure when unemployment appears, is therefore an essential condition which must be fulfilled before any one country can operate a gold standard successfully without fear of unemployment at home.

By these means the necessity for violent and rapid readjustment of money prices, incomes, and wage-rates by any one country could be avoided; but some readjustment would still be necessary from time to time. To take a single example: the technical efficiency of production might be increasing more rapidly in America than in England in the production of goods which compete with English exports. In this case English exports would fall as American prices fell relatively

to English prices, and England would lose gold. In order to remain on the gold standard England would be obliged to let her money prices fall as American prices fell; and to prevent unemployment in England money wage-rates would have to fall, as English prices fell more quickly than the productivity of English labour rose. But in this case a very rapid adjustment would not be necessary; for a fall of American costs relative to English costs due to more rapid technical progress in America would be relatively slow, when compared with a fall of American prices relatively to English prices which was caused by an uncontrolled slump of all money prices and incomes in America.

2. Since some adjustment of money prices and costs will still be necessary, the second condition for the effective operation of the gold standard is that countries losing gold should allow their money incomes and prices to fall, while countries receiving gold should allow their money incomes and prices to rise. We have already argued that an export of gold from a country will cause a fall in money incomes and prices in that country by restricting the cash reserves of the banks, and that an import of gold will cause a rise in internal money prices and incomes. It is, however, possible for the Central Bank to prevent these effects of gold movements. If the Central Bank of a country which is losing gold purchases securities in the open market, this, as we saw in Part I, Chapter III (pp. 22–4), will in itself cause a rise in the cash reserves of the ordinary banks, so that by purchasing securities in the market a Central Bank can prevent an export of gold from causing any reduction in the reserves of the ordinary banks. And similarly, by selling securities in the open market a Central Bank can prevent an import of gold from increasing the ordinary banks' cash reserves. It is essential that the Central Banks should not offset gold movements in this way. If they do so, there will be no fall in prices in the country losing gold and no rise in prices in the countries receiving gold, so that the gold movement will be unchecked and sooner or later the country losing gold will be driven off the gold

standard. Indeed, it may be desirable for the Central Banks to adopt the opposite policy and to accentuate the effects of gold movements by selling securities when they lose gold and purchasing securities when they receive gold. It is important that the countries gaining gold should inflate their money incomes and prices; for unless they do so, the whole readjustment must be achieved by a deflation of money incomes and prices in the country losing gold, which deflation must be so much the greater. The gold standard can be expected to work effectively only if a movement of gold from one country to another is met partly by a deliberate inflation in the country gaining gold, and partly by a deliberate deflation in the country losing gold.

3. In order that any deflation of money prices necessary to prevent an export of gold shall not cause unemployment, money wage-rates must be lowered as money prices fall; and in order that any necessary inflation of prices should not lead to an excess of profits, money wage-rates must be raised as prices rise. A country should, therefore, be unwilling to operate the gold standard, if there is not sufficient flexibility of money wage-rates to meet all the readjustments that will be necessary.

4. When a country is on the gold standard, the Central Bank of that country must have certain reserves of gold. For it must be able to meet any demand for gold on the part of people who wish to export gold. There are various legal provisions in different countries regulating the minimum gold reserve, which the Central Bank must hold. Of these the two most important are the Fiduciary Issue system, which is in operation in England and which was discussed in Part I, Chapter III (p. 21), and the Proportional Reserve system, which is in operation in America and France among other countries. With the Fixed Fiduciary Issue system the Central Bank is only allowed to issue notes equal in value to the gold held by the Bank plus a certain fixed amount of notes backed by other assets. With the Proportional Reserve system the Central Bank must hold a minimum

gold reserve equal in value to a certain proportion (e.g. 40 per cent.) of its note issue, or of its deposit liabilities and its note issue.

In any case the Central Bank must hold a certain minimum gold reserve, which is related in some way to its note issue or to the total value of its liabilities in the form of notes and deposits. The Central Bank must be able to meet all possible demands for gold for export; and the amount of gold which it must hold for this purpose depends upon the total volume of monetary transactions undertaken. For the larger the volume of monetary transactions undertaken, the greater is the possible fluctuation in any figure in the Balance of Payments and so the greater the possible demand for gold to meet a disturbance in the Balance of Payments. In order, therefore, that the gold standard should operate successfully, the total supply of gold reserves, available for all the Central Banks of the countries on the gold standard, must be sufficient to form an adequate backing against that volume of monetary transactions which is necessary to prevent a world-wide slump in money prices and incomes.

Let us suppose that throughout the world capital is being accumulated and the population is growing, so that the output of goods and services is increasing. To obtain full employment of the factors of production it may be necessary for money incomes and expenditure to increase as real output increases, in order to prevent the prices of commodities falling below their costs. In these circumstances the volume of money in all countries, and therefore the note issue and the deposit liabilities of the Central Banks, must be increasing. If on the average an increase of 2 per cent. per annum in Central Banks' note issues and deposit liabilities is just sufficient to prevent unemployment on the one hand, or boom conditions on the other, their gold reserves should also be increasing at a rate of 2 per cent. per annum. It may so happen that the output of new gold is just sufficient for this purpose. But if the output of gold is less than sufficient, unemployment will not be avoided, unless money wage-rates

can be reduced appropriately. But if money wage-rates are not very flexible, some means must be found of adjusting the total stock of gold reserves to the requirements necessary to preserve a high level of employment throughout the world.

The Central Banks can to some extent meet this difficulty by alterations in the proportion between their total liabilities and their gold reserves. If the output of gold is too small, the Central Banks of the different countries in co-operation might diminish the proportion of their liabilities which they cover with gold reserves. This will enable them to adopt monetary policies which preserve full employment. It may of course involve an alteration in the legal limits below which their reserves are not allowed to fall. There are, however, limits to the possible reduction in the reserve proportion of any Central Bank. It must not fall below a minimum which is necessary to enable the Central Bank to meet any possible demands upon it for gold.

In the second place the difficulty can be met by an extension of the gold exchange standard. If a Central Bank holds part of its reserves in the form of the money of some foreign country deposited with a foreign bank, this reserve is as useful as gold in meeting any demand for foreign money to make payments abroad, but it economizes in the total amount of gold. Suppose that the rate of exchange between the pound and the dollar is £1 for $5, and that the Bank of England keeps £100 worth of its reserves in the form of $500 deposited in an American bank. If this American bank holds gold reserves of only 10 per cent. against its deposit liabilities, then $50 (or £10) worth of actual gold is acting as a gold reserve of £100 for the Bank of England.

There is, however, a danger in the extension of the gold exchange standard. Suppose that a country which is operating the gold exchange standard loses reserves to another country. Then instead of selling gold for export, which would reduce the gold reserves of the first and increase the gold reserves of the second country, the Central Bank of the first country may sell part of its deposit in the second country

to those who wish to make larger payments to the second country. This will cause the reserves of the Central Bank of the first country to fall, but will not cause any increase in the reserves of the Central Bank of the second country; for there is no import of gold into that country but simply a change in ownership of some of the deposit liabilities of the ordinary banks of that country. There will therefore be a reduction in the total volume of Central Bank reserves, and the whole of the adjustment must be brought about by a deflation of money incomes and prices in the country operating the gold exchange standard. Conversely, if an increase takes place in the payments made to a country which is on the gold exchange standard, the Central Bank of that country will increase its reserves by holding more money on deposit in the other country, but there will be no export of gold from the country making the payment. In this case the whole adjustment in the Balance of Payments must be brought about by an inflation of money prices and incomes in the country on the gold exchange standard. There is therefore a danger of a general deflation of money prices and incomes, when countries on the gold exchange standard lose reserves, and a danger of a general inflation of money prices and incomes, when countries on the gold exchange standard gain reserves.

This difficulty could be met if the countries operated a gold exchange standard but kept their reserves in the form of deposits with a single International Bank. Suppose that the Bank of England and the American Federal Reserve Banks[1] deposited all their gold with the Bank for International Settlements in Basle, and counted these deposits of Swiss francs of a fixed gold value as their gold reserves. Then if England lost reserves to America, the deposits of the Bank of England with the Bank for International Settlements would fall, but at the same time there would be a rise in the reserves of the Federal Reserve Banks in the form of extra deposits with the Bank for International Settlements. The

[1] These twelve banks in the U.S.A. perform the functions of a Central Bank in that country.

necessary readjustment would therefore fall partly on England and partly on America. At the same time the Bank for International Settlements could control the total volume of Central Bank reserves by buying securities from or selling securities to the different Central Banks. Suppose, for example, that in order to prevent a world-wide slump it was necessary to increase the total volume of gold reserves by 10 per cent. The Bank for International Settlements could purchase an amount of securities from the Bank of England equal in value to 10 per cent. of the Bank of England's reserves and could pay for these securities by increasing its deposit liability to the Bank of England. By a similar purchase of securities from the Federal Reserve Banks and the Central Banks of the other countries on the gold standard, the total value of Central Bank reserves could be raised by 10 per cent.

This is probably the simplest method of controlling the total volume of gold reserves; but there is a third method, which might be preferred. If there was a shortage of gold reserves, all the Central Banks might agree to raise their fixed buying and selling prices of gold by the same proportion. Suppose that an ounce of gold is bought and sold by the Bank of England at the fixed price of £4 and by the American Federal Reserve Banks for $20. Then the par rate of exchange between the pound and dollar is fixed at £1 for $5. Suppose that the Bank of England raised its fixed buying and selling price of gold by 25 per cent. from £4 to £5 an ounce, and that the Federal Reserve Banks at the same time raised their buying and selling price of gold by 25 per cent. from $20 to $25 an ounce. The par rate of exchange between the pound and dollar would remain unchanged at £1 for $5, so that the main result of the gold standard, namely the fixity of the rates of exchange between the currencies of the countries on the gold standard, would be preserved. But the nominal value of the gold reserves both of England and America would be raised by 25 per cent. in terms of pounds and dollars, and this would enable the English and American

banking systems to expand the total amount of money in the way required to prevent a world-wide slump in money prices and incomes.

This revaluation of the gold value of the pound and the dollar would provide a money profit to the Central Banks. If, for example, the Bank of England held £200 millions of gold reserves, these reserves would become worth £250 millions if the Bank's buying and selling price of gold was raised from £4 to £5 an ounce. Any profit due to such a revaluation of the gold content of the pound should properly accrue to the government; and if the value of the Bank of England's gold stock was raised in this way by £50 millions, the deposit liability of the Bank of England to the government would be raised by £50 millions on the other side of the Bank's account. The government could use this extra sum for extra expenditure not covered by taxation; and the expenditure of this sum would in itself help to prevent the fall in money incomes and prices, which it was the object of the revaluation to avoid.

In a similar way, if the total value of Central Bank reserves became too large to prevent a world-wide boom, the Central Banks might reduce their buying and selling prices of gold simultaneously by the same percentage. This would reduce the gold stocks of the banks valued in terms of pounds and dollars, and so would cause the necessary contraction. The loss, which in this case would be caused by the fall in the value of their gold reserves, should in each country be met by the government; and the necessary reduction in expenditure or rise in taxation would itself aid the desired fall in money incomes and prices.

5. If the gold standard is to work successfully, appropriate rates of exchange between the different currencies must be chosen. This consideration is of vital importance when countries are intending to return to the gold standard. For example, suppose that at a rate of exchange of £1 for $4 the English Balance of Payments is in equilibrium. Suppose, however, that England is not on the gold standard, while America is on the gold standard at a buying and selling price

of gold of $20 an ounce; if then England returned to the gold standard at a fixed buying and selling price of gold of £4 an ounce, the rate of exchange would be fixed at £1 for $5. Since England's Balance of Payments was in equilibrium at £1 for $4, England would now lose gold; for at the rate of exchange of £1 for $5 English goods and services would be too expensive in America and American goods and services would be too cheap in England. In order to preserve the gold standard at the rate of exchange of £1 for $5, English prices and incomes would have to be reduced relatively to American prices and incomes. If before England's return to the gold standard both countries had that internal level of interest rates, prices, and incomes which just preserved full employment, this would involve deflation and unemployment in England or a profit boom in America. If the American monetary authorities prevented any import of gold into America from leading to a rise in prices and incomes there, the necessary deflation in England would be so much the more severe. Unless wage-rates could be rapidly reduced in England, a prolonged period of unemployment would begin. In returning to the gold standard countries must choose those rates of exchange, at which the Balance of Payments between them will be in equilibrium, when their internal prices are so adjusted to their money costs of production that there is full employment.

The criterion therefore for the correct rates of exchange is to be found simply in the Balance of Payments. With those interest rates, money prices, and money incomes which give a country internal equilibrium, there will be one rate of exchange between its currency and other currencies which will enable its Balance of Payments to balance without gold movements. A more appreciated value of its currency in terms of foreign currencies will cause a drain on its reserves; a more depreciated value for its currency will cause a drain on other countries' reserves. To find the appropriate buying and selling price of gold and so the appropriate rates at which the exchanges should be stabilized, the method of trial and

error alone can be used, if a number of countries wish to return to the gold standard at a time when they are not already in internal equilibrium. The authorities in consultation must fix upon certain rates of exchange, which they think are appropriate, and must then *temporarily* fix their buying and selling prices of gold at figures which give these chosen rates of exchange. The monetary authorities can then continue with their internal policies which are designed to preserve a high level of employment at home. If there is a steady drain of gold from country A and a steady import of gold into country B, this is a sign that the currency of country A has too appreciated a value in terms of other currencies, while that of country B has too depreciated a value. Country A must raise and country B must lower its buying and selling price of gold by an amount which is judged sufficient to stop the steady flow of gold. By readjustments of the rate of exchange of this kind, a final rate of exchange for each currency might be obtained, which would put each country both in internal equilibrium and in equilibrium with the other countries.

6. If a country receives a large amount of interest or of reparations from abroad, its Balance of Payments will be in equilibrium, only if it lends more abroad than it borrows from abroad or if it imports from abroad more than it exports. A creditor country, if it is not willing to lend sufficient abroad, must import more than it exports. There is in many people's minds a fallacious belief that a country is better off if it has a 'favourable' balance of trade or an excess of exports over imports than if it has an excess of imports over exports; but the only real advantage to a nation from interest or other such receipts from abroad is that it can obtain some part of its imports without exporting any goods or services in return for them. If countries work on the hypothesis that an 'unfavourable' balance of trade is always undesirable, creditor countries will raise tariffs, quotas, and prohibitions on imports and will subsidize their exports, so long as their balance of trade is unfavourable. But this must

result either in a continual flow of gold from the debtor to the creditor countries, since the debtors are unable to export more than they import by reason of the tariff policy of the creditor countries, or else in a repudiation of their indebtedness by the debtor countries. If international debts are not to be repudiated, the creditor countries must adopt a tariff policy which allows an excess of imports over exports in order to receive payment of that part of their interest which they do not wish to lend abroad again. This is true, whether the countries are on the gold standard or not; but the gold standard will certainly break down, if the tariff policy of the creditor countries causes a continued loss of gold reserves by the debtor countries to meet the interest on their indebtedness. This argument does not prove that there must be a complete absence of tariffs for the gold standard to work, but simply that the tariffs of the creditor countries must not be so raised as to make it impossible for the debtor countries to export more than they import. The pros and cons of tariffs on other grounds will be argued in Chapter V of this Part.

III

FREE EXCHANGE RATES

IF any of the six conditions discussed in the last chapter are not fulfilled, the gold standard cannot be successfully operated; and in these circumstances a country should retain an independent monetary standard. We must therefore consider the way in which the Balance of Payments is adjusted in the case of countries which are not on an international monetary standard. Suppose that the English legal money is simply the pound note issued by the Bank of England, and that the Bank of England is under no obligation to buy and sell gold at a fixed price in terms of these notes. In these circumstances the rate of exchange between the pound and the dollar is no longer fixed within any prescribed limits. The only way to obtain dollars for pounds or pounds for dollars is to exchange the dollar notes or deposits directly for pound notes or deposits; and there are no longer any fixed gold import or export points to prevent a fluctuation in the rate of exchange between the pound and the dollar.

To show how the Balance of Payments is adjusted in these conditions we may suppose again that all exchange dealings take place through a number of exchange dealers, who hold deposits of pounds in English banks and deposits of dollars in American banks, and who exchange dollar deposits for pound deposits for people who wish to make payments between the two countries. Let us suppose that the rate at which the exchange dealers are exchanging dollars for pounds and pounds for dollars is £1 for $5, and that at this rate of exchange the total amount of pounds which Americans wish to purchase with dollars is just equal to the total amount of pounds which English people wish to sell for dollars. Then the Balance of Payments is in equilibrium; and the balances of dollars and of pounds held by the exchange dealers will remain unchanged, since the exchange of dollars for pounds by Americans will just offset the exchange of pounds for

dollars by Englishmen. If Englishmen then decided to spend £10 millions a week more on American goods, the amount of pounds offered to the exchange dealers by Englishmen to obtain dollars would be £10 millions in excess of the amount of pounds bought from exchange dealers by Americans each week. As long as the rate of exchange remained £1 to $5, the exchange dealers' holding of pounds would increase by £10 millions a week, and their holding of dollars would diminish by $50 millions a week. The Balance of Payments still balances; English imports have risen by £10 millions a week, but the amount lent to England has also risen by £10 millions a week, since the exchange dealers themselves are moving £10 millions worth of their capital from dollars to pounds each week.

As long as this continues, the exchange dealers' holding of pounds will continue to increase and their holding of dollars to diminish, and they must take steps to prevent their dollar balances from dwindling to nothing. They will offer less dollars per pound, in order to stop part of the English demand for dollars, and the rate of exchange will move from £1 for $5 to—let us say—£1 for $4. As the value of the pound depreciates in terms of dollars, American goods will become more expensive in England, since less dollars can be obtained for a pound, and English goods will become cheaper in America, since a pound can be obtained with less dollars. In consequence English imports will diminish and English exports will increase. The value of the pound will continue to depreciate so long as the demand for dollars with pounds is in excess of the demand for pounds with dollars; for so long as this is so, the exchange dealers will be increasing their holdings of pounds and will be running short of dollar balances. But there will come a point in the depreciation of the exchange value of the pound at which English imports have diminished and English exports have increased just sufficiently to equate the total amount of pounds bought by Americans to the total amount of pounds sold by Englishmen. At this point the Balance of Payments will again be

in equilibrium. This readjustment can come about without any change in money incomes and prices or in interest rates in England or in America; the depreciation of the exchange value of the pound is alone sufficient to adjust the Balance of Payments.

A country which is not on the gold standard will therefore be free to concentrate upon its internal monetary policy in order to preserve a high level of employment, and can leave the exchange rate with other countries to find that level at which the payments and receipts in its Balance of Payments are equal. While this should be the essential principle of policy for any country, which is not on the gold standard, some control over its Balance of Payments would still be desirable.

If a country's exchange rate with other countries is not fixed, some control should be exercised over the movement of short-term funds between it and other countries. The reason for this can be shown by an illustration. Suppose that the existing rate of exchange between the pound and dollar is £1 for $5, but that people expect the pound to depreciate from $5 to $4; such an expectation might be due to the fact that a slump was developing in America, while it was known to be the policy in England to prevent any fall in money prices and incomes. So long as people expect this depreciation in the value of the pound, there is a profit to be made by exchanging pounds for dollars at £1 for $5 in order to purchase pounds with dollars in the near future at £1 for $4. But this purchase of dollars with pounds in order to move short-term funds abroad will in itself cause the pound to depreciate in value, and it will have two undesirable effects. In the first place, because speculators are attempting to anticipate future events, it will cause the pound to depreciate *before* the fall in prices and incomes in America has made the exchange depreciation necessary to adjust the other items in the Balance of Payments. And secondly, it may cause the pound to depreciate much more than is really necessary to adjust the other items in the Balance of Payments. While a

depreciation of the pound from $5 to $4·5 may be all that is necessary to preserve equilibrium in England's Balance of Payments, the speculative movement of funds into dollars may cause the pound to depreciate to $4, because people overestimate the extent to which American prices and incomes will fall or the extent to which the pound must depreciate to maintain equilibrium in face of a given fall in American prices. The exchange depreciation should be controlled in such a way that it is neither more rapid nor more extensive than is necessary to adjust the normal item in the Balance of Payments to the changed conditions. For any unnecessary depreciation in the exchange value of a country's money will raise unnecessarily the price of imported goods, and so will reduce the real wage-rate and the standard of living below what is necessary to preserve full employment. If the price of foreign goods is falling, a depreciation in the exchange value of a country's currency, which is just sufficient to offset the fall in foreign prices, will not lower the standard of living at home; the fact that less dollars can be obtained for the pound will be offset by the fact that the dollar will buy more American goods. But if there is a rapid depreciation in the exchange value of the pound caused by the speculative movement of short-term funds from pounds to dollars, the exchange value of the pound will depreciate in expectation before dollar prices fall, and the amount of American goods which can be purchased with a pound will fall.

A second reason for avoiding a speculative movement of funds abroad is that it will intensify unnecessarily the slump in prices and incomes in other countries. If an internal monetary policy is being adopted in England to preserve full employment, a depreciation of the exchange value of the pound, sufficient to offset any fall in American prices and incomes, is necessary to allow this policy to be successfully carried out. But if there is a large movement of short-term funds from England to America, the exchange value of the pound must depreciate more than this; the price of English goods in America will fall more quickly than the price of

American goods, and the price of American goods in England will rise. In consequence English goods will compete more strongly with American goods both in American and English markets. The consequent increase in English exports and fall in her imports is necessary in order to finance the movement of short-term funds to America; but it is unnecessary in order to preserve full employment in England, since full employment is being preserved by the English internal monetary policy. In America, however, the slump will be intensified, because American producers will lose part of their markets to English producers. If, however, the speculative movement of short-term funds to America were avoided, English goods would not compete any more strongly with American goods, and the slump in America would not be intensified.

When one country alone is successfully adopting an internal monetary policy designed to preserve a high level of employment, there is a strong case for the control by it of the amount of capital lent abroad on long-term as well as of the movement of short-term funds. Suppose that the long-term rate of interest in America and in England is 5 per cent. and that a slump starts in both countries. If England by her monetary policy reduces the rate to 3 per cent. to avoid the slump, while America does not reduce the rate from 5 per cent. and suffers a slump in consequence, there will be an increase in the purchase of dollars with pounds due to the sale of English securities with a 3 per cent. yield in order to purchase American securities with a 5 per cent. yield. This increase in long-term foreign lending will have the same effects as the increase in short-term foreign lending, which we have just examined. To finance the increased lending abroad English exports must rise and her imports fall, and to bring this about the pound will depreciate to an extent more than sufficient to offset the fall in American prices and incomes. This will cause an unnecessary fall in the English real wage-rate, and by enabling English goods to compete on better terms with American goods will intensify the slump in

America. We shall argue in Chapter VI of this Part that from the international point of view capital should always be allowed to flow from a country in which its real yield is low to one in which its real yield is high. But the free movement of capital from a country in which the real yield on capital is low to a country in which monetary policy has failed to lower the rate of interest in conformity with the true yield on new capital development, will merely lower standards of living by raising the price of imports in the first and by intensifying the slump in the second country.

The principles upon which any control of capital movements should be exercised are clear. All movements of short-term funds, which are taking place simply to profit from expected alterations in the rate of exchange, should be prevented. It will be the duty of the monetary authority which is exercising the control to judge what movements of short-term funds fall into this category. In the case of long-term capital movements the criterion is somewhat more difficult. The object is to prevent the export of capital on long-term to any country in which the rate of interest has not been sufficiently reduced by internal policy to prevent a slump. In practice this decision must be somewhat arbitrary; its effect will be to prevent large increases in foreign lending, which would otherwise occur during a world slump if interest rates are reduced at home to prevent unemployment but remain high abroad.

The net amount lent abroad by any country can be controlled by an Exchange Equalization Fund. In England an Exchange Equalization Fund was set up under the control of the Treasury to prevent speculative movements of short-term capital from affecting the exchange value of the pound. The Fund was enabled to borrow through the sale of Treasury Bills up to £350 millions, i.e. the Fund could obtain pounds by selling government securities to the public or to the banks up to a limit of £350 millions. These pounds could be used to purchase gold or foreign money; and the fund could subsequently sell for pounds any gold or foreign money,

which it had so obtained. Thus the Exchange Equalization Fund on the one hand holds a certain amount of gold or foreign money, and on the other hand has the power to borrow pounds equal to £350 millions minus that part of this £350 millions which it has already borrowed to purchase gold or foreign money. The Fund can prevent any movement of short-term funds from affecting the rate of exchange between the pound and foreign currencies. If an Englishman buys £100 worth of dollars from the exchange dealers to lend on short-term in America, this extra purchase of dollars tends to depreciate the value of the pound; but if at the same time the Exchange Equalization Fund buys £100 from the exchange dealers with part of its holding of dollars, there will be no depreciation of the pound. The Englishman lends £100 abroad, but the Exchange Equalization Fund offsets this by diminishing its holding of dollars in order to hold £100 more in pounds. Conversely, if Americans lend more on short-term to England and purchase pounds for this purpose, the Exchange Equalization Fund, by buying dollars with pounds, can prevent an appreciation of the exchange value of the pound. The Exchange Equalization Fund was not intended to prevent an appreciation or depreciation of the pound which was due to fundamental changes in the Balance of Payments; it was intended simply to prevent speculative short-term movement of funds from causing unnecessary movements in the exchange rates.

This method of control is subject to two criticisms. In the first place the government risks losing considerable sums on the exchange operations involved. Suppose that to offset a movement of funds to England the Fund bought dollars at $4 for £1, when the equilibrium rate of exchange was near this figure. If subsequently prices and incomes rise in America so that the equilibrium rate of exchange moves to $5 for £1 and the Fund then has to sell dollars for pounds to offset a movement of funds from England, the Fund will lose. The Fund will make a profit if it has to buy dollars when they are cheap and to sell them when they are expensive

in terms of pounds. But if speculators are intelligent in their expectations of the way in which the equilibrium rate of exchange is likely to change, the Fund is bound to make a loss: for speculators will move funds from a currency that will depreciate to one that will appreciate, and in order to prevent an alteration in the rate of exchange before it is necessary, the Fund must purchase the currency that is about to depreciate in value.

A more serious criticism of this method of control is that it cannot be effective if there is a very considerable movement of short-term funds. If the Fund is holding only £100 millions worth of foreign money, at a time when people wish to move more than £100 millions of short-term funds abroad, the Fund cannot prevent this movement of short-term funds from having some effect upon the rate of exchange. For when it has sold all its foreign money, it can exercise no further control. If it is certain that England by her internal policy will prevent her prices and money incomes from falling and if a considerable slump has started abroad, it will be certain that the pound will sooner or later depreciate considerably. In these circumstances the amount of funds moved abroad might be very large, and the Exchange Equalization Fund might not hold sufficient foreign money to prevent the pound from depreciating more quickly than was necessary to preserve equilibrium in the normal items in the Balance of Payments.

The only certain method of controlling the volume of foreign lending is by the monopolization of exchange dealings in the hands of some central monetary authority, such as the Central Bank. If this method were adopted in England, the Bank of England would hold a reserve of foreign money or of gold which could be sold for foreign money, and would then fix a rate of exchange between the pound and foreign money, which it considered would put the English Balance of Payments in equilibrium without any speculative movements of short-term funds. At this rate of exchange it would allow the purchase and sale of foreign money in unrestricted

amounts for the purposes of import and export of goods and services, for the payment of interest on debt, tourist expenditure, and all other current items in the Balance of Payments. But it could disallow any purchase or sale of foreign money for the movement of short-term funds or for 'abnormal' movements of long-term capital. If it had in fact chosen the correct rate of exchange, it would then find that the amount of pounds which it received from customers desiring to purchase foreign money for approved purposes was just equal to the amount of pounds which it paid out to foreigners wishing to purchase pounds for approved purposes. Its holding of foreign money would therefore be unchanged. If, however, it had fixed the exchange value of the pound at too high a figure, its customers would purchase less pounds from it for foreign money than they sold to it for foreign money, and its balances of foreign money would fall. In these circumstances it would revise the fixed rate of exchange and would offer less foreign money per pound. The Central Bank would concentrate on its internal policy, would allow all purchases and sales of foreign money for approved purposes, and by a process of trial and error would adjust the rate of exchange with other currencies to the rate which kept the Balance of approved Payments in equilibrium.

To make the control of capital movements complete, further powers would be necessary besides the monopolization of foreign exchange dealings in the hands of a single authority; for there are certain ways in which people can move funds abroad without purchasing foreign currencies. An Englishman who obtains his income in foreign money can lend money abroad by refraining from purchasing pounds with this money. English exporters or English owners of foreign securities can lend money abroad by refraining from purchasing pounds with the foreign money obtained from the sale of their goods or received as interest on their capital. In order to control the volume of foreign lending the central monetary authority must have the legal power to force such persons to sell this foreign money to it for pounds at the

current rate of exchange. Information about the income received from foreign sources should not be impossible to obtain. For the customs authorities can inform the relevant authority of the value of all goods exported. And the income tax authorities for the purpose of taxing income derived from foreign investments already collect information about the foreign securities owned by Englishmen.

In carrying out this policy the Central Bank would probably allow the purchase and sale of foreign money at the current rate of exchange through agents, and for this purpose the ordinary commercial banks might operate as agents of the Central Bank. The commercial banks would probably co-operate in applying this control as agents of the Central Bank, in such a way as to prevent all capital movements which were not approved. But if they would not co-operate fully for this purpose, this would provide a reason for their socialization, which was discussed in Chapter IV of Part I.

If a country which is not on the gold standard has to face an unemployment problem at home, it can raise its money incomes and prices by the means discussed in Part I. If other countries are not at the same time adopting a similar policy of internal expansion, this will cause some increase in its imports from abroad and some fall in its exports, unless the exchange value of its currency depreciates sufficiently to offset the rise in its prices and incomes. We have argued that countries which are not on the gold standard should attempt to cure unemployment at home by these means, and should allow the exchange value of their currencies to depreciate by an amount just sufficient to keep their Balance of Payments in equilibrium. Such a policy will have no adverse effects upon the trade of other countries; for if England, for example, allows the exchange value of the pound to depreciate, as English prices and money incomes rise, this will not restrict the markets of other countries. The exchange depreciation of the pound will only prevent an increase in English imports and a fall in her

exports, which would otherwise have occurred because of the rise in prices and incomes in England.

But a country which was not on the gold standard might attempt to cure unemployment by depreciating the exchange value of its currency by more than was necessary to offset any rise in its internal prices and incomes, in order thereby to increase its exports and to restrict its imports so that it obtained markets at the expense of foreign countries. Suppose that the English Balance of Payments is in equilibrium, but that England depreciates the exchange value of the pound without at the same time raising her prices and incomes at home by internal monetary expansion. The money demand for English goods will increase, because foreigners will buy more English exports and because Englishmen will buy less foreign and more home-produced goods. This increase in expenditure on English goods will cause their price to rise and employment will increase in England both in the exporting industries and in the industries which produce goods previously imported. Such a depreciation in England's exchange rate might be brought about in a number of ways. The English Exchange Equalization Fund might purchase foreign currencies with pounds, although there was no movement of short-term funds to offset. This is equivalent to a movement of short-term funds abroad manipulated by the English government in order to depreciate the exchange value of the pound to increase the English favourable Balance of Trade. Or if England were on the gold standard, by raising the buying and selling price of gold in terms of pounds at a time when her Balance of Payments is already in equilibrium, she could depreciate the exchange value of the pound in such a way that her favourable Balance of Trade increased. The expansion in English exports and contraction in her imports would in this case be financed by an import of gold. This flow of gold must in the end be stopped by a rise in English money prices and incomes and by a fall in money prices and incomes in other countries; and in this case England will have achieved an expansion of her own internal purchasing

power at the expense of a similar fall of purchasing power in other countries.

It is not to be denied that such action can cure unemployment in England, if other countries do not retaliate. But there are three reasons why this method of curing unemployment should be avoided. First, it will almost certainly be made ineffective by foreign retaliation. If England begins by such methods to depreciate its exchange rate and to flood the world markets with its exports and to restrict its market for imports, other countries will almost certainly retaliate by devaluating the gold value of their currencies (i.e. by raising their buying and selling prices of gold), or by setting up Exchange Equalization Funds to depreciate their currencies as quickly as, or more quickly than, England, or by imposing special tariffs on English goods. In this case there will be no net extension of the markets for English goods. Secondly, if retaliation does not take place and England does succeed in diminishing unemployment by this means, there will be an unnecessarily large fall in the English real wage-rate. For the method consists in raising the price of imported goods by depreciating the exchange value of the pound without any primary rise in its own money incomes to offset the rise in the price of imports. Thirdly, if the method is successful, it will cure unemployment in England at the expense of creating unemployment in other countries. For the increase in English exports and fall in her imports will take place at the expense of the markets for foreign products. For these reasons each country should meet its unemployment problem by internal monetary expansion and by allowing that depreciation in the exchange value of its currency which is necessary to preserve equilibrium in its Balance of Payments, rather than by measures designed to manipulate an increase in its favourable Balance of Trade, which may enable it to expand at the expense of other countries.

IV

INTERNATIONAL TRADE

WE have now to examine the theory of international trade in order to see how such trade should be regulated. The theory of trade between nations differs from the theory of trade within a nation. In the case of internal trade, the factors of production will sooner or later move to those districts and occupations in which the rewards are highest, whereas the movement of the factors of production between nations is not free. The movement of labour between nations is hindered not only by the cost of such movement, but also by language barriers and ties of sentiment. The movement of capital between nations is less restricted; but it is to some extent because of ignorance on the part of investors and because the ownership of capital in a foreign land involves greater risks.

In Part II it was argued that the best distribution of resources among different occupations in a single community was that which would make the value of the marginal product of each factor the same in every occupation. If there were free movement of factors between nations, there would be nothing more to add. Factors of production should move from those nations in which the value of their marginal products was low to those nations in which it was high. But if the factors of production cannot move freely while their products can be imported and exported, we have to decide how the factors of production can be distributed among different occupations within a nation in order to achieve the greatest advantage from international trade in commodities.

Let us see how any one country can obtain the maximum advantage from international trade. Suppose that in England the marginal cost of producing a loaf of bread is 6*d*. and the marginal cost of producing a pound of tea is 2*s*. This means that England by producing one less pound of tea can release

factors valued at 2*s*. and can therefore produce 4 more loaves of bread. Suppose that in France a loaf of bread is sold for 4 francs and a pound of tea is also sold for 4 francs; this means that by selling one loaf of bread in France enough money can be obtained to purchase one pound of tea. It follows therefore that if England gives up the production of one pound of tea in order to produce 4 loaves of bread, she can sell these 4 loaves of bread in France and obtain thereby sufficient French money to purchase 4 lb. of tea. By this means England can obtain 3 extra lb. of tea. In these circumstances England should concentrate on the production of bread, should export bread and obtain her tea by import from France; for she can obtain more tea by this means than by using some of her factors at home to produce tea instead of bread.

This does not necessarily mean that England should abandon the production of tea entirely. For as she produces more bread and less tea, the marginal cost of producing bread may rise and that of producing tea may fall. If the marginal cost of producing bread has risen to 1*s*. and of producing tea has fallen to 1*s*., then England can only produce one more loaf of bread by producing one less lb. of tea; and if the price in France of bread and tea is 4 francs, she can only obtain 1 lb. of tea for each loaf of bread exported. In these circumstances there is no gain to be derived from any further movement of the factors from producing tea to producing bread. It can be seen from this that England will obtain the maximum advantage from international trade, if the factors of production in England are distributed among the production of the different importable and exportable commodities in such a way that the ratio between the marginal costs of these commodities in England is the same as the ratio between the prices of these commodities in foreign markets.

If there is perfect competition in England and if England adopts a free-trade policy, this condition will be fulfilled. In conditions of perfect competition commodities will sell at prices which are equal to their marginal costs of production,

as we have shown in Chapter I of Part II. Therefore, if the marginal cost of tea were four times as great as the marginal cost of bread in England, while the price of French tea was the same as the price of French bread, bread would be exported from England to obtain tea from France. An English merchant could sell a loaf of bread in France for the price of a pound of tea, and could then sell this pound of tea in England for the price of 4 loaves of bread. He would therefore make a profit equal to the price of 3 loaves of bread. Such trade would be continued until the ratio between the price of tea and bread in England—and so also the ratio between the marginal cost of tea and bread in England—was the same as the ratio between the price of tea and bread in France. Whether the two countries are on the gold standard or on independent monetary standards, it will pay English people to export bread and import tea, as long as the ratio between the cost of tea and the cost of bread in England is higher than the ratio between the price of tea and the price of bread in France.

This fundamental advantage from international trade can be obtained by England, even if there is not perfect competition in England. We have argued in Chapters VII and VIII of Part II that in the absence of perfect competition some form of public control of industry is desirable, in order that the different commodities may be made to sell at prices which are in the same ratio as their marginal costs. As long as some control over monopolistic industries is exercised, so that the prices at which goods sell in England are in proportion to their marginal costs of production, England can obtain the full advantages of international trade. This she will do by exporting commodities as long as the foreign price is higher than the English cost of producing them, and by allowing the free import of commodities so long as the foreign price is lower than the English marginal cost of producing them.

This fact has an important implication for the policy of countries in which industries are socialized. We have argued

in Chapter VIII of Part II that in this case there should be a free consumers' market in the purchase of commodities, so that the prices offered for different goods measure their marginal utilities, and that commodities should be sold by socialized industries at prices equal to their marginal costs of production. It was argued that this policy would maximize internal production and satisfy consumers' needs most fully. We may now add that if at the same time a free-trade policy is adopted, the country will obtain the maximum advantage from international trade. The free-trade principle applied to socialized industries involves

(1) allowing consumers to purchase freely from abroad;
(2) the sale by socialized industries of their products at the same price at home and in foreign markets, i.e. at prices equal to marginal costs;
(3) the purchase by socialized industries of their raw materials from home or abroad according as the home or the foreign price is lower; and
(4) the adjustment of the money exchange rate with other countries or the raising or lowering of all money prices and wage-rates at home on the principles discussed in the last two chapters, until with the free import and export of commodities the Balance of Payments is in equilibrium.

If this is done, there will only be equilibrium when the factors of production in England have moved to the production of those commodities, from which consumers' needs can be best satisfied whether by internal or international trade. It is important therefore to realize that a country in which industries are socialized can choose a free-trade policy equally as well as a *laissez-faire* community, and that exactly the same advantages will result in both cases.

This is the fundamental argument in favour of Free Trade. If the ratio between the marginal costs of two importable and exportable commodities in England is different from the ratio between their prices in foreign markets, England can obtain more of the one commodity without having less of the

other by importing the commodity whose marginal cost in England is relatively high and by financing these imports through the export of the commodity whose marginal cost in England is relatively low. It is to be observed that this argument for a free-trade policy in England does not depend upon the assumption of a free-trade policy in other countries. If the price at which English merchants can sell bread in France is 4 francs, this may be due to the fact that the marginal cost and so the price of bread is 4 francs in France, and that France is adopting a free-trade policy. But it may equally well be due to the fact that the marginal cost and price of bread in France is 6 francs, and that France imposes an import duty of 2 francs on each loaf of bread, so that the English exporter obtains only 4 francs for each loaf, for which the French consumer pays 6 francs. But if the prices at which an English merchant can sell bread in France and obtain tea from France are both 4 francs, while in England the marginal cost of bread is greater than the marginal cost of tea, England can gain by importing tea and exporting bread. It makes no difference to the gain obtained by England whether these price ratios in France are due to Free Trade or to Protection in France.

While the fundamental argument for Free Trade in any country rests upon national considerations, which are not dependent upon the adoption of Free Trade by any other country, there is an *international* loss—i.e. a loss when we consider the interests of the world as a whole—so long as any country does not adopt a free-trade policy. We can show this by means of an example. Suppose that in France the marginal cost of producing a loaf of bread and of producing a pound of tea is 4 francs, while in England the marginal cost of producing a loaf of bread is 6*d*. and of producing a pound of tea 2*s*. These figures are shown in columns A and C of Table XIII. Since the marginal cost of a loaf of bread is the same as the marginal cost of a pound of tea in France, by producing 1 less loaf of bread France can produce 1 more pound of tea. In England, however, the marginal cost

of a pound of tea is four times as great as the marginal cost of a loaf of bread, so that by producing 1 less pound of tea England can produce 4 more loaves of bread. It follows therefore, as is shown in columns B and D of Table XIII, that if France produces 1 more pound of tea and England 1 less pound of tea, the total output of bread may be increased by 3 loaves, since France will have to produce only 1 less and England

TABLE XIII

The Ratio between the Marginal Costs of Two Commodities differs in Two Countries

	A *Marginal cost in France*	B *Change in output in France*	C *Marginal cost in England*	D *Change in output in England*
Loaf of bread	4 francs	−1	6*d.*	+4
Pound of tea	4 ,,	+1	2*s.*	−1

can produce 4 more. If, however, both tea and bread can be imported and exported, both countries could have the same amount of tea and 1½ more loaves of bread. This result would be achieved if France produced 1 less loaf of bread in order to produce 1 more pound of tea to export to England, and if England produced 1 less pound of tea in order to produce 4 more loaves of bread and exported 2½ of them to France in exchange for the imported pound of tea.

But if the ratio between the marginal costs of tea and of bread is the same in both countries, no gain can be obtained from international trade. Such a situation is illustrated in Table XIV, where in France the marginal cost of tea is 6 francs and of bread is 3 francs, while in England the marginal cost of tea is 1*s.* 6*d.* and of bread is 9*d.* In both countries now the marginal cost of tea is twice as great as the marginal cost of bread. In these circumstances no increase in the total output of bread is possible without a diminution in the total output of tea. If 1 more pound of tea is produced in France,

2 less loaves of bread must be produced there; while the production of 1 less pound of tea in England allows the production of only 2 more loaves in England.

In order therefore that the total world output of exportable and importable commodities should be maximized, in the sense that it shall be impossible for any country to have more of one of these commodities without any other country

TABLE XIV

The Ratio between the Marginal Costs of Two Commodities is the same in Two Countries

	A *Marginal cost in France*	B *Change in output in France*	C *Marginal cost in England*	D *Change in output in England*
Loaf of bread	3 francs	−2	9*d.*	+2
Pound of tea	6 ,,	+1	1*s.* 6*d.*	−1

having less of any other commodity, the factors of production in each country must be concentrated on the production of those exportable and importable commodities, for which the marginal costs of production are relatively lowest. This result will automatically be brought about if in all countries all commodities are sold at prices equal to their marginal costs and if there is Free Trade between them. For as long as the ratio between the marginal cost of tea and that of bread were higher in England than in France, merchants would purchase the relatively cheap bread in England, would sell this bread in France to purchase tea, and would sell this tea in England for a price greater than that which they had paid in the first place for the English bread.

This argument must, of course, be restricted to exportable and importable commodities, and does not apply to commodities such as houses and fresh milk which cannot be transported. In as far as such goods are concerned, the arguments of Part II apply without modification or extension. Suppose

that the marginal cost of milk and of tea is the same in France and that the marginal cost of tea is four times as high as the marginal cost of milk in England. If France produced 1 less unit of milk and so 1 more unit of tea, while England produced 1 less unit of tea and so 4 more units of milk, the two countries together would have the same amount of tea and 3 more units of milk. But if milk could not be transported from England to France, there would not necessarily be any advantage in this change. Neither country could obtain more of one commodity without having less of the other; and each will obtain the maximum advantage from internal trade in milk and tea, if these goods are sold at prices equal to their marginal costs in a free consumers' market.

The arguments of this chapter imply nothing about the absolute efficiency of the factors of production in England and France. In Table XIII the marginal cost of bread and of tea is the same in France, while in England the marginal cost of tea is four times as great as the marginal cost of bread. This says nothing about the absolute height of real costs in either country. It might be that in France 8 more units of labour, land, and capital would be needed to produce another loaf of bread or another pound of tea, whereas in England only 1 more unit of labour, land, and capital would be needed to produce another loaf of bread and only 4 more units of labour, land, and capital would be needed to produce another pound of tea. It would still be true that the marginal costs of bread and tea were the same in France, and that the marginal cost of tea was four times the marginal cost of bread in England. Both countries could still gain, if France produced tea instead of bread, and England produced bread instead of tea. England would be importing from France a commodity, which she could make twice as cheaply as France, and exporting a commodity she could make eight times as cheaply as France. If the factors of production could move from France to England, the result would be quite different. French factors of production would migrate to England to produce both tea and bread, since the marginal product and

so the reward of the factors is greater in England in both occupations. For this reason internal trade—where the factors of production will move to the occupation in which their real reward is highest—is said to depend upon differences in absolute costs, while international trade—where the factors of production cannot move—is said to depend upon differences in comparative costs, i.e. upon differences in the ratio between the costs of commodities in different countries.

We have shown that if the ratio between the marginal costs of producing two commodities is different in two countries a gain can be obtained, if each concentrates on the production of that commodity in which its marginal cost is relatively low. But we have not yet shown which country will obtain the greater part of this advantage. The distribution of the gain from trade between England and France, for example, can be measured by the Terms of Trade between them, i.e. by the amount of imported goods which England obtains for each unit of her exports. In Table XIII it is assumed that before trade takes place 1 lb. of tea costs 1 loaf in France, whereas 1 lb. of tea costs 4 loaves of bread in England. When England exports bread and imports tea, she will gain so long as she has to pay less than 4 loaves for each pound of imported tea, and France will gain so long as she obtains more than 1 loaf for 1 lb. of tea. The terms of trade which allow both countries to gain lie between 1 loaf for 1 lb. of tea and 4 loaves for 1 lb. of tea. If 1 lb. of tea is exchanged for $1\frac{1}{2}$ loaves of bread, England will obtain much and France little of the gain. Whereas if the terms of trade are $3\frac{1}{2}$ loaves of bread for 1 lb. of tea, France will gain much and England little.

When trade starts, England will sell bread to France and France will sell tea to England. The price of tea will fall in England, as English people have more tea; and the price of bread will fall in France, as Frenchmen have more bread. The terms of trade will be favourable to England, if as Frenchmen have more bread they offer only a slightly lower price for bread, and if as Englishmen have more tea they offer a

much lower price for tea. For if the price of bread falls only slowly in France but the price of tea falls quickly in England, England will be able to obtain a large amount of tea for each loaf of bread exported to France.

The terms of trade will become more favourable to a particular country,

(a) if tastes change so that its nationals spend less on imports or so that the foreigner's demand for its exports increases;

(b) if the country in question receives more interest or tribute from abroad or pays less to foreign countries; and

(c) if the country in question borrows more from abroad or lends less abroad.

If, for example, tastes change in England so that there is a fall in the English demand for imported goods, the English demand for foreign money will fall below the foreign demand for English money, since English people will be purchasing less foreign money to buy foreign goods. If England is on the gold standard, gold will flow to England from other countries; and equilibrium in England's Balance of Payments will be restored only when English prices have so risen and foreign prices have so fallen, that the consequent rise in English imports and fall in her exports has made the English demand for foreign money equal again to the foreign demand for English money at the fixed rate of exchange. But in this new position England will be obtaining her imports at a cheaper price and will be selling her exports at a higher price; for it is only because of the rise in price of English goods relatively to the price of foreign goods that England is importing more again and exporting less. In other words, England will be obtaining more imports per unit of exports, and the terms of trade will have moved in her favour. An increase in the foreign demand for English goods, the receipt by England of more interest or tribute from abroad or the payment by England of less money on these accounts, the borrowing of more money from abroad or the lending of less

money abroad by England—any of these changes will either increase the foreign demand for English money or reduce the English demand for foreign money, and will therefore cause a flow of gold to England. This flow of gold can only be stopped by a rise in English prices and a fall in foreign prices, i.e. by a movement of the terms of trade in England's favour.

These same changes will also cause the terms of trade to become more favourable to England, if England is not on the gold standard. A reduction in the English demand for foreign goods, for example, will as before cause the English demand for foreign money to fall below the foreign demand for English money. In this case the Balance of Payments will be brought into equilibrium by an appreciation of the exchange value of the pound, which will make the price of foreign goods lower in England and the price of English goods higher in foreign countries. The appreciation of the exchange value of the pound will continue until English exports are so restricted by the rise in their price in foreign countries and English imports are so increased by the fall in their price in England, that the Balance of Payments is again in equilibrium. The terms of trade will have moved in England's favour. The price in pounds of English goods has remained unchanged, while the price in pounds of foreign goods has fallen, so that England is obtaining more imports per unit of exports. And similarly, an increase in England's net receipts of interest or tribute from abroad, or a diminution in her net lending abroad, will also cause the exchange value of the pound to appreciate, so that the terms of trade move in England's favour.

V

FREE TRADE AND PROTECTION

IN this chapter we shall see to what extent the fundamental argument for Free Trade, presented in the last chapter, must be modified by the arguments, which can be brought forward in favour of a policy of Protection. There are five such arguments which we shall examine:

(1) that by imposing a tariff a country can move the terms of trade in its favour;
(2) that by means of a tariff a country can tax the foreigner;
(3) that a tariff is useful to protect infant industries;
(4) that by protecting its industries a country can diminish unemployment at home; and
(5) that a country should protect its industries against the competition of cheap foreign labour.

1. We stated at the beginning of the last chapter that the argument for Free Trade was a purely national one, since England, for example, would herself gain by adopting Free Trade whatever policy was adopted in other countries. We argued that if England could sell a loaf of bread in France for 4 francs and could buy a pound of tea from France for 4 francs, Englishmen would gain by exporting bread and importing tea, so long as the marginal cost of bread were lower than the marginal cost of tea in England; and this gain would be automatically achieved by Free Trade in England. But this argument assumed that the price at which England could sell bread and purchase tea in France would remain 4 francs, however much or however little England traded with France; or in other words, we assumed that the terms of trade were fixed at 1 loaf of bread for 1 lb. of tea.

But the imposition of a tariff on imports may move the terms of trade in England's favour, if other countries do not retaliate by raising tariffs. If England puts a tariff on commodities imported from France, the immediate effect is to

raise the price of French products to English consumers without raising the price which France obtains for her exports. The difference between these two prices is caused by the import duty, and provides a revenue for the English government. England's demand for French commodities will fall in consequence of the rise in their price to English consumers; and a smaller total amount will be paid to Frenchmen for their exports to England. If England and France are both on the gold standard, gold will flow to England, English prices will rise, and French prices will fall; or if England is not on the gold standard, the pound will appreciate in value in terms of the franc, so that the price of English exports rises in France and French products are offered by Frenchmen at a lower price in pounds in England.

In either case England receives more French commodities per unit of her exports to France. This does not, of course, mean that the price of French products will be lower to English consumers than before the imposition of the tariff; for the duty itself will raise the price of French products in England. But the price in pounds which Frenchmen receive for their products will be lower; and the difference between this price and the price of French products to English consumers will go to the English government as an extra revenue. In as far, therefore, as the imposition of the English tariff enables England to obtain more French products per unit of her exports, English people do gain by the tariff. For although English consumers are paying a higher price than before for French products, the Frenchman is receiving a lower price in pounds for these goods and the difference accrues to Englishmen in the form of a reduction of other taxes or in the form of increased expenditure by the English government.

But we cannot conclude that England will necessarily gain by the imposition of the tariff. It is true that for every unit of French products still imported, England is exporting less than before. But it is also true that the total volume of English imports and exports will be smaller than before.

England is importing less because of the duty on these imports, and is exporting less, because the English Balance of Payments has only been adjusted by means of a rise in the price of English goods in France, which causes France to purchase less from England. On every unit of her goods exported in return for French products England is making a larger gain than before; but she is exporting less of her goods. *She is therefore making a larger gain per unit of trade on a smaller volume of trade.* If the increased gain per unit of trade (i.e. the movement in the terms of trade) is small but the diminution in the volume of trade is large, England will lose by the imposition of the tariff. If the gain per unit of trade is large and the diminution in the volume of trade small, she will gain by the imposition of the tariff.

England will therefore lose by the imposition of a tariff if a slight rise in the price of English goods in France causes French people to reduce their purchases of English goods considerably, and if a slight fall in the price offered by England causes a large diminution in the amount of goods which Frenchmen will offer for sale in England. For in these circumstances there will be a considerable reduction in the volume of trade with only a small movement of the terms of trade in England's favour. If France can obtain from other countries or by her own manufacture the goods which she is importing from England, and if France can sell in other markets the goods which she is exporting to England or can easily turn her factors of production from the production of exports for England to the production of something else for other countries or for her own use, the price of English goods in France will not rise much and the price at which France offers goods to England will not fall much.

If England is a small country and France is a large country—which will be true if France stands in our example for the rest of the world with which England is trading—these conditions are likely to be fulfilled. For there will be other sources of supply open to the rest of the world for goods which were being bought from England. And if England is

small in relation to the rest of the world, any diminution in England's demand for foreign goods due to the imposition of the tariff would cause only a relatively small fall in the total world demand for those goods, so that what was now no longer sold to England could easily be absorbed at slightly lower prices in the rest of the world market. England could move the terms of trade considerably in her favour by means of a tariff, only if she exported goods which other countries must have but could not easily make for themselves, and if she bought a large proportion of the world output of the goods which she imported, so that those countries which supplied England could not readily sell their products in other markets without causing a large fall in the price. We may conclude that if England can move the terms of trade in her favour by imposing a tariff, she will gain something by the imposition of a tariff, provided that the tariff is not so high that the gain in the terms of trade is outweighed by the loss in the volume of trade. The more easily England can cause the terms of trade to move in her favour without losing a considerable volume of trade, the higher is the tariff which will bring her the maximum advantage. But only a low tariff is justified by this argument, if a large loss of trade would be caused by a small movement in the terms of trade in England's favour.

This argument holds good, only if other countries do not retaliate when England raises her tariff. Just as England can cause the terms of trade to move in her favour by imposing a tariff on foreign goods, so foreign countries can cause the terms of trade to move in their favour by imposing a tariff on English goods. If England raises a tariff on imports from France, which reduces the English demand for French products, France by imposing a tariff on English goods can reduce the French demand for English goods. If the French tariff just offsets the English tariff, there will be no flow of gold between the two countries and no change in the rate of exchange between their currencies; and the terms of trade will remain unchanged.

In this case it is certain that both England and France will be worse off after the imposition of the tariffs. For suppose that there is an English tariff on tea imported from France and a French tariff on bread imported from England, and that the terms of trade between England and France are 3 loaves of English bread for 1 lb. of French tea. In this case the price which France obtains from England for a pound of tea is 3 times as high as the price which England obtains from France for a loaf of bread. Since there is a tariff in England on the import of tea, the price of a pound of tea to English consumers will be more than 3 times—say it is $3\frac{1}{2}$ times—the price of a loaf of bread, which means that English consumers are still willing to give up as much as $3\frac{1}{2}$ loaves of bread for another pound of tea. And since there is a tariff in France on the import of bread into France, the price of a pound of tea in France will be less than 3 times —say it is twice—the price of a loaf of bread to French consumers. This means that French consumers are still willing to give up a pound of tea if they can get as much as 2 loaves of bread for it. If both countries reduced their tariffs, so that they undertook more trade in bread and tea at the same terms of trade of 3 loaves of bread for a pound of tea, consumers in both countries would gain on the additional trade. For English consumers would get more tea at a price of 3 loaves for each additional pound of tea, though they are willing to give $3\frac{1}{2}$ loaves for each extra pound of tea; and the French consumers would get 3 loaves more bread for each additional pound of tea exported, though they are willing to give up a pound of tea for 2 loaves of bread.

Agreements among nations to reduce their tariffs on each other's goods will invariably benefit each individual country, if the tariff reductions made by each country are such that the extra demand for each country's goods is the same. In this case the tariff reductions will cause no flow of gold and no change in the rate of exchange between the currencies of the different countries, so that there will be no change in the terms of trade between them. Moreover, it is almost

certain that *any* agreement among nations to reduce their tariffs simultaneously will benefit each individual nation. For each nation will gain from the increased volume of trade, and the change in the terms of trade is unlikely to be large, if they all reduce their tariffs at the same time.

We have seen that one country may gain by imposing a tariff, if it can thereby change the terms of trade considerably in its favour and if other countries do not retaliate by the imposition of tariffs. But even in this case a net loss will be inflicted on all countries taken together. If a single country gains by imposing a tariff, other countries will lose more than the single country gains. Suppose that there is an English tariff on the import of French tea, while France allows the free import of English bread, and that the terms of trade are 3 loaves of English bread for 1 lb. of French tea. Then in France a pound of tea will be 3 times as expensive as a loaf of bread, which means that French consumers would be willing to give up 1 lb. of tea for 3 loaves of bread. In England, since there is a tariff on the import of tea, a pound of tea will be more than 3 times as expensive to consumers as a loaf of bread. If a pound of tea is $3\frac{1}{2}$ times as expensive as a loaf of bread in England, English consumers would be willing to give up $3\frac{1}{2}$ loaves of bread for an extra pound of tea.

A reduction in the English tariff would cause an increase in the volume of trade, but would move the terms of trade against England. Suppose that it would move the terms of trade from 3 loaves of English bread for 1 lb. of French tea to $3\frac{1}{4}$ loaves of bread for 1 lb. of tea. In these circumstances both English and French consumers would gain on all the *additional* trade. For England pays only $3\frac{1}{4}$ loaves for each additional pound of tea imported, although English consumers would give $3\frac{1}{2}$ loaves for an extra pound of tea; and France gets $3\frac{1}{4}$ loaves for each extra pound of tea exported, although French consumers would give a pound of tea for only 3 loaves.

But England may lose by reducing her tariff, because the gain she gets by importing more pounds of tea at $3\frac{1}{4}$ loaves

per pound may be more than offset by the fact that she will have to give $3\frac{1}{4}$ instead of 3 loaves for each pound of tea, which she is *already* importing. France on the other hand, besides gaining on all the additional trade in tea, will also gain on all the pounds of tea which she is already exporting, for which she will now get $3\frac{1}{4}$ instead of 3 loaves of bread. By the lowering of the English tariff both England and France will gain on all the additional trade; while England will lose and France will gain on all the existing trade. But the loss of England on the existing trade is exactly equal to the gain of France on the existing trade. In as far as England is giving $3\frac{1}{4}$ instead of 3 loaves per pound of tea, France is getting $3\frac{1}{4}$ instead of 3 loaves per pound of tea on the existing trade in tea. It follows that the gain to England and France on the *additional* trade, caused by the tariff reduction, is a net gain from the international point of view. We have already shown in the last chapter (pp. 339 to 341) that the world output of importable and exportable commodities will be maximized, only if all commodities are sold in all countries at prices equal to their marginal costs and if there is Free Trade in these commodities between the nations. To maximize the economic well-being of the world Free Trade is therefore essential.

2. The second argument for Protection is that a country by raising taxes on its imports can force the foreigner to contribute to its budget revenue. If England imposes a tariff on imports from France, either the price of these commodities must rise to English consumers by the amount of the tax, in which case the English consumers bear the burden of the tax, or else the price obtained by the Frenchmen for these commodities must fall, in which case the Frenchmen is contributing to England's tax revenue. As we have shown, the price of French products will be significantly reduced by the imposition of the English duty, only if Frenchmen cannot easily sell these commodities in other markets, cannot easily shift the factors to produce other products, and cannot easily find alternative sources of supply for the goods which are being bought from England. In

other words, whether or not England is in a position to tax the foreigner depends upon whether or not England is in a position to turn the terms of trade in her favour by imposing a tariff. This second argument for Protection is, therefore, merely another way of stating the first argument for Protection, which we have already discussed at length.

3. It is argued that a tariff can properly be imposed to encourage an infant industry. We have shown in Part II that there are certain industries, in which economies of large-scale production are important. In these industries the cost of production would be high, if only a small output were produced, but could be lowered if the output were considerably increased. It may well happen, for historical reasons, that England is not producing a particular product, which is being produced on a large scale in France. If this product is one in which the economies of large-scale production are important, it will not be profitable for English producers to embark on its production on a small scale. But if England were producing this commodity on a large scale, its marginal cost in England might be so reduced that it would really be advantageous to produce it in England. For this reason, it is argued, the production of this commodity should be protected, until the industry had been organized on so large a scale behind the tariff that the product, when sold at a price equal to its marginal cost, would compete economically with the imports from France.

This argument is perfectly sound. If, however, by the means suggested in Part II, Chapters VII and VIII, steps are taken to ensure that every product is sold at a price equal to its marginal cost, the protection of an infant industry need only be temporary. For if, when the commodity is being produced on a large scale in England, its marginal cost were not reduced below the price of imports from France, the industry should not have been protected. The protection of an industry by means of a tariff is justified on this principle, only if it is genuinely considered that when the industry has once grown it will be able to compete with foreign

products by selling at a price equal to its marginal cost. It must, however, be remembered that, as we argued in Part II, Chapter VII (pp. 183 and 184), the marginal cost of a commodity may remain below its average cost, when the industry is producing a sufficient output to satisfy the whole market. In such cases it is proper permanently to sell the commodity at a price lower than its average cost by means of a permanent subsidy or by socializing the industry and selling its product at a loss. Both in internal and in international trade it is the marginal and not the average cost, which should determine how much of each commodity should be produced.

4. The fourth argument in favour of Protection is that it will diminish unemployment. In Part I it was argued that unemployment could be cured if a rise in money prices and incomes were brought about by monetary expansion without a similar rise in money wage-rates. If this policy is adopted, the rise in internal prices and money incomes will in itself cause the demand for foreign goods to rise and the foreign demand for the country's goods to fall. To maintain equilibrium in the Balance of Payments the exchange value of the country's currency may be depreciated, as we argued in Chapter III of this Part (pp. 323 to 325). But this exchange depreciation is not necessary. The imposition of a tariff on imports will also reduce the country's demand for foreign goods and so restore equilibrium to its Balance of Payments, provided that the tariff is high enough and provided that other countries do not retaliate. But there is nothing that a tariff will do in these circumstances that cannot be done equally well by allowing a depreciation of the exchange value of the country's currency. A 10 per cent. tariff on a country's imports and a 10 per cent rise in the amount of the country's money which must be given to obtain a given amount of foreign money will both raise the price of foreign goods by 10 per cent., and will both, therefore, restrict the import of foreign goods by the same amount. The imposition of a tariff will allow a country to adopt an internal policy of expansion without a depreciation in the exchange value of its currency,

and will therefore enable it to reduce unemployment by these means without going off the gold standard. But unemployment could equally well be reduced without the imposition of a tariff either by a general reduction in money wage-rates accompanied by a monetary policy designed to prevent a similar fall in internal prices and incomes, or by a monetary policy designed to raise internal prices and incomes accompanied by a depreciation of the exchange value of the country's currency. Since these other means are compatible with the maintenance of Free Trade, they are to be preferred if the other arguments in favour of Free Trade are accepted.

The imposition of a tariff on imports to preserve equilibrium in the Balance of Payments, at a time when a country is expanding its money incomes and prices at home, will not intensify unemployment in other countries. The imposition of the tariff does not restrict the total markets for foreign goods but only prevents the internal expansion from causing an increase in the demand for the products of other countries. But a tariff, imposed at a time when the country's Balance of Payments is already in equilibrium and unaccompanied by a monetary expansion at home, may diminish unemployment at home at the cost of intensifying it elsewhere, just as a manipulated depreciation of the exchange value of a country's currency, which is not necessary to offset a rise of incomes and prices in that country, will intensify unemployment in other countries, as we argued in Chapter III of this Part (pp. 333 and 334).

The imposition of a tariff in a single country without a rise in its prices and money incomes, and without an appreciation in the exchange value of its currency, will cause imports to fall off without any immediate fall in exports. This will diminish unemployment at home at the expense of employment in other countries by increasing the demand for home produced goods at the expense of the demand for foreign goods. The country imposing the tariff may prevent the fall in its demand for foreign goods from causing an appreciation in the exchange value of its currency in either of two

ways. It may remain on the gold standard, in which case the increase in its favourable Balance of Trade will be financed by an import of gold. In this case sooner or later the gold flow will be stopped by a rise in its own prices and incomes and by a fall in foreign prices and incomes, until its Balance of Payments is in equilibrium again. But it will have raised its own money prices and incomes at the expense of a fall in the money prices and incomes of other countries. If, however, it is not on the gold standard, it may prevent an appreciation in the exchange value of its currency by the use of an Exchange Equalization Fund, which can purchase foreign currencies to move short-term balances abroad as the purchase of foreign currencies for the purpose of financing imports falls off. In this case the country can maintain the increase in its favourable Balance of Trade, so long as the Exchange Equalization Fund continues to operate in this way.

If the fall in a country's demand for imports is met neither by an inflow of gold nor by an increase in its lending abroad, the exchange value of its currency must appreciate until this has caused a sufficient rise in imports and fall in exports for the Balance of Payments to be in equilibrium again. If this happens, the unemployment position in other countries will not be worsened. For the appreciation in the exchange value of the country's currency will cause it to increase its demand for foreign goods again and will cause foreigners also to spend less on its goods and more on their own. This rise in the demand for foreign goods will offset the fall in the demand for foreign goods which was caused in the first place by the imposition of the tariff.

To sum up: the best policy for a country to adopt to cure unemployment is to raise its prices and money incomes by monetary expansion and to allow the exchange value of its currency to depreciate just sufficiently to keep its Balance of Payments in equilibrium. This combines the advantages of full employment with the advantages of Free Trade. If, however, a country wishes to cure unemployment by internal monetary expansion but does not wish to allow the exchange

value of its currency to depreciate, it should raise tariffs just sufficiently to keep its Balance of Payments in equilibrium as its prices and incomes rise. If, however, it should wish for some reason or another to impose a tariff without any accompanying internal monetary expansion, then, in order to avoid intensifying unemployment in other countries, it should allow the exchange value of its currency to appreciate sufficiently to keep the normal items in its Balance of Payments in equilibrium, and should not prevent this exchange appreciation by lending more on short-term abroad or by allowing a drain of gold from other countries.

5. It is sometimes argued that, while the case for Free Trade is in general acceptable, yet a country should protect the standard of living of its inhabitants, if a particular industry is undercut by the products of another country in which the standard of living of the workers is very low. To take an example, it may be argued that the Lancashire cotton industry should be protected against the competition of Japanese cotton goods, because of the very low wages of Japanese cotton operatives. A reduction in the price of Japanese cotton goods—whether it be due to low wages in Japan or to great efficiency of labour in Japan—will increase the sale of such Japanese goods in Japan, in England, and in other markets in which England was previously selling her cotton goods. English exports will fall and her imports will rise. In order to preserve equilibrium in the English Balance of Payments together with full employment in England, English money wage-rates may be reduced until England has obtained sufficient foreign markets—either in the sale of cotton goods again or in the sale of other English goods which have become cheaper by the fall in English wage-rates—to replace the loss of markets to the Japanese. Or, alternatively, the pound may be allowed to depreciate in terms of the Japanese yen and of the currencies of other countries, until, at the level of English prices which will give full employment at home, the price of Japanese cotton goods and of other foreign goods in England has so risen and the price of English

cotton goods and other products in Japan and other countries has so fallen that British imports and exports balance again.

By either of these means England can in part meet the Japanese competition in cotton goods and in part expand the markets for her other products, and can therefore preserve full employment in face of the Japanese competition. But in either case there may be a fall in the English standard of living; for the fall in English money wage-rates, which is necessary if England is to stay on the gold standard, or the rise in the price of imported goods, caused by the depreciation in the exchange value of the pound, may be much more serious than the fall in the price at which Japanese cotton goods are offered to the English consumers. It is not to be denied, therefore, that a reduction in the cost of Japanese cotton goods may reduce standards of living in England. But could England prevent this by imposing a tariff on such goods instead of reducing her money wage-rates or depreciating the exchange value of the pound?

The imposition of a tariff on Japanese cotton goods will prevent an increase in English imports by keeping up the price of cotton goods to English consumers, and will thus enable England to preserve full employment at home with a smaller fall in English money wage-rates or with a smaller depreciation in the exchange value of the pound than would otherwise have been necessary. But from the point of view of preserving full employment a tariff has this disadvantage: it can only protect the English internal market, whereas a reduction in English money wage-rates or a depreciation in the exchange value of the pound will enable English goods to compete on better terms with Japanese goods both in England's internal market and in her export markets. Since, therefore, a tariff is a less effective method of preserving full employment, it should be used only if England can thereby turn the terms of trade considerably in her favour, or can thereby prevent the terms of trade from moving considerably against her, when the Japanese competition becomes more keen. We have already examined at the beginning of this

chapter the conditions in which this will be possible. If England is in a position to turn the terms of trade considerably in her favour by means of a tariff, this may be the best means from England's point of view to meet the Japanese competition. But if England can gain in this way after the intensification of the Japanese competition, she was probably in a position to do so before, and should, therefore, have already imposed the tariff.

There is, therefore, no special argument in favour of a tariff to meet competition due to cheap foreign labour. For the effect on England of a reduction in the price of foreign goods is the same, whether this reduction in price is due to cheap foreign labour, to great efficiency of labour in foreign countries, to the subsidization by foreigners of their exports, or to favourable natural conditions in foreign countries. And since England can always preserve full employment by means of a reduction in her money wage-rates or by a depreciation in the exchange value of the pound, she can gain by a tariff only if she can thereby turn the terms of trade considerably in her favour. But this argument for a tariff exists, whether wages are high or low in other countries.

VI

INTERNATIONAL MOVEMENTS OF LABOUR AND CAPITAL

IT has been pointed out in Chapter IV of this Part (p. 335) that the theory of international trade is based upon the assumption that the factors of production cannot move from one country to another; and it was shown that this assumption is to a large extent true. But movement of the factors of production between nations is not always impossible, and we must therefore decide on what principles such movements should be encouraged or prevented.

In the case of land we have no problem to discuss; for land by definition includes all the natural resources in a particular country, over which man has no power, and which cannot, therefore, be transferred from one country to another. There remain for discussion the principles upon which the movement of labour and capital between nations should be regulated.

Let us suppose that in England and France—whether because there is perfect competition in both countries or because monopolistic conditions are controlled in both countries on the principles suggested in Chapters VII and VIII of Part II—all commodities are bought and sold freely at prices equal to their marginal costs, and that each factor is paid a reward equal to the value of its marginal product. If in these circumstances labour obtains a higher real wage in England than in France, it would be *possible* by transferring labour from France to England to increase the welfare of the labourer so transferred without diminishing the welfare of any one else. For the reduction in the output in France due to the loss of the single worker is of less real value to that worker than the increase in output due to his employment in England. On this principle labour should be allowed to move freely from France to England until the real wage, represented by labour's marginal product in each country,

was the same in each country. This principle must, of course, be modified, on the principle discussed in Part II, Chapter II (pp. 112 and 113), if it costs something to move labour between the countries. Labour should move from France to England, only if the excess of the real wage in England over the real wage in France is more than sufficient to compensate for the cost of movement. Apart from legal restrictions on the international migration of labour, which on the present principle should be abolished, the movement of labour will be hindered by the difficulty of obtaining capital to finance the cost of movement, by ignorance of opportunities for employment in different occupations in different countries, and by language difficulties. The principle of free international migration of labour suggests that these hindrances should be lessened by measures of the type, suggested in Part II, Chapter VII (p. 173) in the case of movement within one country.

The free movement of labour from France to England in search of the highest real wage-rate might, however, be to the detriment of labour already employed in England. Unless the population in England is below the optimum, the marginal product and so the real wage-rate of labour will fall in England as the supply of labour increases; and unless the population in France is below the optimum, the marginal product and so the real wage-rate will rise in France, as the supply of labour decreases. There will be a net advantage from the international point of view, if labour moves from France to England in search of a higher real wage. For the fall in the standard of living of the people *already* in England will be counterbalanced by the rise in the standard of living of the people left in France; while the labourers transferred from France to England will enjoy a rise in their standards, which is, therefore, a net gain. From the international point of view there is a further gain from this transfer of labour. Not only will the transfer of labour increase the total income of the world, because labour moves to a country in which its marginal product is greater; but the consequent fall in the

standard of living in England and rise in the standard of living in France will cause the total income of the world to be more equally divided. And for the reasons discussed in Chapter I of Part III a rise in incomes in a country in which the citizens are poor is likely to cause a greater increase in satisfaction than an equal fall in incomes in another country in which the citizens are rich.

We conclude, therefore, that, from the international point of view, free migration of labour is generally desirable, whereas, from the national point of view, free immigration is desirable only if the national population is below the optimum. But there is one condition in which the free migration of labour will be undesirable from the international point of view as well. Let us suppose that the marginal product and so the wage of labour is higher in country B than in country A, but that in country A the population always increases as long as the standard of living is above the subsistence level. As labour moves from country A to country B, the marginal product and so the real wage of labour will rise in country A and fall in country B. But if the rise in the standard of living in country A simply causes the population to increase in that country, the marginal product and so the wage of labour in country A will fall again as more labour seeks employment there. In consequence, more labour will move from country A, in which the marginal product of labour has fallen, to country B in which there has been no further growth in population. This further transference of labour will again raise the marginal product of labour in country A and will lower the marginal product of labour in country B. The rise in the standard of living in country A will cause the population to increase, will cause a fall in the marginal product of labour in that country, will necessitate a further transference of labour to country B and so will cause a further fall in the marginal product of labour and in the standard of living in country B. There will be no end to this process, until there has been so great a growth of population in country A and so great a transference of this population to country B, that the

standard of living in both countries has been reduced to the same subsistence level, which allows no further increase in the population of country A. Even from the strictly international point of view, therefore, free migration of labour should be allowed only if a rise in standards in the country from which labour is emigrating will not cause an excessive and uncontrolled growth of population in that country.

We have next to deal with the principles upon which the movement of capital from one country to another should be controlled. Suppose that in both England and France the rate of interest offered for capital measures the marginal product of capital in each industry, and that there is Free Trade in commodities between England and France. If the investment of £100 worth of machinery in France will bring in a net annual return of commodities priced at £5, while the investment of £100 in England will bring in a net annual return priced only at £3, then—from the international point of view at least—the £100 should be invested in France rather than in England. The use of £100 more machinery in France will add to the output of the two countries something which is more valued by French and English consumers than the additional output due to the investment of £100 more machinery in England. For this reason if the yield on capital is higher in France than in England, it is *possible*, by the investment of capital in France rather than in England, to raise standards of living in both countries. On this principle the free movement of capital from country to country in search of the highest yield should be allowed. If in any country the government controls the supply of new savings, it should lend abroad rather than at home, if the yield on capital is higher. The free movement of capital between countries may be hindered not only by legal restrictions, which on this principle should be removed, but also by ignorance on the part of investors of the yields to be obtained in different countries. Such ignorance might be minimized by an international body performing the functions,

which we suggested in Part II, Chapter VII (p. 174), might be performed at home by a special body designed to give authoritative judgement of the probable yields of investment in different forms of capital.

But freedom to lend abroad will not always be to the advantage of the people of the country in which the yield on capital is relatively low. The lending of capital to foreign countries may turn the terms of trade against the country, so that its citizens lose more by the movement in the terms of trade than they gain by the higher yield on their capital. If Englishmen lend more to France, England must increase her exports or diminish her imports, until her favourable balance of trade has increased by an amount sufficient to finance the loan to France. If the French borrowers spend the money on capital goods produced in England, English exports will automatically increase by an amount sufficient to finance the loan to France, and there will be no movement in the terms of trade against England. But if the money is spent on French capital goods, then the loan of money from England to France will not automatically increase the demand for English goods. If both countries are on the gold standard, gold will move from England to France, the price of English goods will fall and of French goods will rise, until English imports fall off and English exports rise sufficiently to finance the loan. If the two countries are on independent standards, the exchange value of the pound will depreciate in terms of francs, and this will raise the price of French products in England and lower the price of English products in France, until the English favourable balance of trade has been increased sufficiently to finance the loan. In either case England will obtain less French imports per unit of her own exports, while the loan is being made.

Later, however, when the interest payment on the loan must be made by France to England, the terms of trade will turn in England's favour. For now English imports must increase or her exports must diminish, until England has an unfavourable balance of trade sufficiently great to allow

France to finance the interest payments to England. But since the capital sum of the loan will be large relatively to the annual interest to be paid on it, England will have to develop a relatively large favourable balance of trade in the year in which the loan is being made. In subsequent years in which the interest payments are being made, England will have to develop only a relatively small unfavourable balance of trade. In consequence it is probable that the movement of the terms of trade against England will be large while the loan is being made, and that the movement of the terms of trade in England's favour will be small in the subsequent years when England is receiving the interest. England may therefore lose more by the movement in the terms of trade against her than she gains by investing money at a higher rate of interest in France than in England.

This point is illustrated in Table XV. Let us suppose that the rate of interest is 5 per cent. in France and 3 per cent. in England, that the countries are on independent monetary standards so that the rate of exchange between their currencies can vary, and that in both countries there is no change in prices. In these circumstances any change in the rate of exchange between their two currencies is also an accurate measure of the movement or the terms of trade between them. Thus, if the rate of exchange moves from £1 for 100 francs to £1 for 50 francs, this means that for an English export priced at £1 England receives only 50 instead of 100 units of French goods priced at 1 franc. Column A of Table XV shows the rate of exchange between the pound and the franc, and so with our assumptions also the terms of trade between England and France. Before England lends to France or France pays interest to England the rate of exchange is £1 for 100 francs. The exchange value of the pound depreciates to 50 francs while the loan is being made from England to France, and subsequently appreciates to 101 francs when France is paying interest to England.

Column B shows the value of English exports in pounds. In order to simplify the illustration we have assumed that

this figure is constant at £1,000, or in other words, that Frenchmen always buy the same amount of goods from England. If this is so, in order to finance the loan to France the value of English imports must fall by the full amount

TABLE XV

The Effect of Foreign Lending on the Terms of Trade

	A *Rate of exchange*	B *Value of English exports in pounds*	C *Value of English imports in pounds*	D *Value of English imports in francs*
First year, in which no loan is made and no interest is paid.	£1 to 100 frs.	£1,000	£1,000	(1,000 × 100) 100,000 frs.
Second year, in which the loan of £100 is being made.	£1 to 50 frs.	£1,000	£900	(900 × 50) 45,000 frs.
Third and subsequent years, in which interest of £5 is being received.	£1 to 101 frs.	£1,000	£1,005	(1,005 × 101) 101,505 frs.

of the loan, and in order to finance the receipt of interest from France the value of English imports must rise by the full amount of the interest payment.

Column C shows the change in English imports valued in pounds. At first this figure is equal to £1,000, i.e. equal to the value of English exports. While the loan is being made, however, the depreciation of the exchange value of the pound to 50 francs makes French products more expensive in England and English imports fall to £900, so that the excess of English exports over her imports is £100, which is just sufficient to finance the loan of £100. When France pays the interest of £5 per annum, the value of English imports

rises to £1,005, because the appreciation of the pound to 101 francs makes French goods cheaper in England; and thus England has an excess of imports over exports of £5 a year, which is just sufficient to enable the receipt of interest to be financed.

Column D shows the value of English imports in terms of francs. At first England is importing £1,000 worth of goods from France, i.e. she is purchasing 100,000 francs worth of goods since the rate of exchange is £1 to 100 francs. While the loan is being made, England spends only £900 on imports; and since the exchange value of the pound depreciates to 50 francs, she can import only 45,000 francs worth of goods from France. While the interest is being paid, England can spend £1,005 on imports; and since the exchange value of the pound appreciates to 101 francs she is now able to import 101,505 francs worth of goods from France.

From these figures it is possible to work out the actual yield in goods, which England obtains from lending £100 at 5 per cent. to France. We are assuming that the price of goods remain unchanged throughout in England and France, and that the adjustment of England's Balance of Payments is brought about entirely by a change in her imports caused by an alteration in the rate of exchange between the franc and the pound. England throughout gives up to France the same amount of goods; but she receives from France 100,000 units of goods priced at one franc in each of the years before the loan was made, receives only 45,000 units of such goods in the year in which the loan is made, and receives 101,505 units of such goods in each subsequent year, in which the interest is being paid.

Thus in the year in which the loan is made England receives 45,000 instead of 100,000 units of imports, in order to receive 101,505 instead of 100,000 units of imports in each subsequent year. In other words, by giving up 55,000 units of imports in one year she obtains an additional 1,505 units annually in the future. Now 1,505/55,000 is equal approximately to $2\frac{3}{4}$ per cent., so that in terms of real goods England

is obtaining a yield of $2\frac{3}{4}$ per cent. per annum by investing the money in France, although the nominal yield on the investment is 5 per cent. If the yield on capital invested in England is 3 per cent., England would have gained more by investing the money at home than by investing it at the higher nominal yield abroad. The individual English investor will be attracted by the higher rate of interest in France; for the individual Englishman will not take into account the fact that his investment abroad rather than at home will raise the price of imports to all English consumers. For these reasons, from the purely national point of view there may be a sound argument for restricting the volume of lending abroad, in order to prevent this movement of the terms of trade against the lending country.

This argument does not, of course, prove that in all cases the yield to a particular country on foreign investment is lower than the yield on home investment. If a loan of money from England to France causes only a small movement in the terms of trade against England, and if the rate of interest in France is considerably greater than the rate in England, then the investment of money abroad will be to England's advantage. And from the international point of view there is always an advantage in a movement of capital abroad in search of the highest yield. For if the yield on capital is 5 per cent. in France and only 3 per cent. in England, this means (cf. pp. 273 to 277) that, for every 100 units of consumption goods given up, 5 units more will be available in every subsequent year, if the capital development takes place in France, whereas only 3 units more will be available if the capital is invested in England. The fact that England in the example given in Table XV obtains a *real* yield of only $2\frac{3}{4}$ per cent. on money invested in France at 5 per cent. is counterbalanced by the fact that France is paying a *real* price of only $2\frac{3}{4}$ per cent. for a loan which gives her a real yield of 5 per cent. England's loss due to the change in the terms of trade is counterbalanced by an exactly equal gain to France; but there is a net gain to the two countries taken together,

since England could have obtained only 3 per cent. by investing the money at home, while its investment in France gives a yield of 5 per cent., of which $2\frac{3}{4}$ per cent. goes to England and $1\frac{1}{4}$ per cent. to France.

There are two ways, in which we must modify the principle that, from the international point of view, capital should be free to move in search of the highest yield. These modifications have already been mentioned in Chapter III of this Part. In the first place, suppose that England adopts a policy designed to prevent unemployment and for this reason reduces the rate of interest by her monetary policy from 5 per cent. to 3 per cent., which measures the productivity of new investment and so prevents the development of a slump, but that in France the appropriate internal monetary policy has not been adopted, so that the rate of interest remains at 5 per cent. although the productivity of new capital has fallen in France also to 3 per cent. In these circumstances investors in England will be attracted by the higher rate of interest in France, but the true productivity of capital in France is no higher than in England. In this case, therefore, there is no advantage from the international point of view in a movement of capital from England to France. Only if all countries reduce their interest rates by banking policy so as to prevent unemployment is the free flow of capital to the countries with the highest yields desirable from the international point of view.

In the second place, short-term funds may move from one country to another, not because the rate of interest is higher in the second than in the first country, but because the exchange value of the first country's currency is expected to depreciate. The rate of interest both in France and in England may be 3 per cent. and this rate of interest may correspond to the real productivity of new capital investment in both countries, but at the same time the exchange value of the pound in terms of francs may be expected to fall. This will provide an incentive for a short-term movement of capital from England to France, in order that the funds may

in the future be exchanged back into pounds when the pound has depreciated; but there is no fundamental justification for such a movement of capital, since the real productivity of capital is as high in England as in France.

Except in these two cases the free movement of capital between nations in the search of the highest rate of interest should be allowed; and we have already discussed in Chapter III of this Part how the movement of capital may be controlled in these two exceptional cases.

VII

INTERNATIONAL ECONOMIC CO-OPERATION

IN this Part we have discussed International Economic Problems mainly from the point of view of the economic policy of a particular country. It is useful to apply the conclusions of the foregoing chapters to decide how countries should co-operate, in order that each may obtain the maximum economic advantage. Let us suppose, therefore, that another World Economic Conference is to be summoned. What principles should be adopted in the formation of international economic conventions at this conference? In what follows we shall outline five main agreements in order of their importance.

1. An International Agreement to provide Employment by Internal Monetary Policy. We have argued that one country alone can diminish unemployment by internal monetary expansion carried out on the principles discussed in Part I, if it will allow the exchange value of its currency to depreciate sufficiently to keep its Balance of Payments in equilibrium. But such action will be much more effective if other countries are adopting similar policies. Suppose that a world-wide slump in prices starts, and that England by reducing interest rates through banking policy and by other measures causes her prices to rise, while other countries take no such action. There will be a strain on the English exchange rate with other countries, because Englishmen will attempt to lend more abroad where interest rates have not been reduced, and because Englishmen will tend to spend more on imports as their incomes rise. If interest rates were reduced abroad *pari passu* with English interest rates, there would be no abnormal increase in England's foreign lending. If prices and incomes were raised abroad *pari passu* with English prices and incomes, the demand for English exports would rise *pari passu* with the rise in her demand for imports. Internal expansion in any one country

raises the demand in that country both for home-produced goods and for imports; if, therefore, there is expansion in all countries at the same time, there will be a rise in international trade as well as a rise in internal trade in each country.

This principle does not involve much technical international co-operation. The necessary action is, in the main, internal, involving the control of internal banking policy, the stimulation of public works expenditure, and of expenditure on consumption goods. But besides a general agreement among the nations to concentrate on such internal expansion to cure unemployment, two specific international agreements are appropriate.

First, the Central Banks can co-operate directly in lowering interest rates. It might, for example, be agreed that the governors of the Central Banks of each country should meet at the Bank for International Settlements at stated intervals to discuss the desirability of lowering or raising interest rates simultaneously in all countries. Secondly, there are many forms of capital development, the execution of which depends upon direct co-operation between nations. For example, the development of railways, roads, or air lines, which cross the frontiers of many states, needs the co-operation of many independent national authorities. These International Public Works might be planned ahead by an appropriate International Commission, in such a way that expenditure on them can be speeded up or postponed simultaneously in all countries, in order to increase such expenditure during a world slump.

An international agreement of this character is of the utmost importance. Not only would it directly diminish the world-wide problem of unemployment, but it would make it much easier to reach the two international agreements which we shall discuss next—namely, agreements to minimize fluctuations in the exchange rates between different currencies and to reduce tariffs and other barriers to international trade. Uncontrolled fluctuations in money incomes and prices in one country are the most important cause of large fluctua-

tions in the rate of exchange between two currencies. If each country is preventing any considerable internal fluctuations of prices, the need for changes in the rate of exchange between different countries would be reduced to a minimum. In the modern world the most important cause of tariff barriers is the desire of each country to diminish unemployment at home by preserving the home market to home producers; and this cause will be removed, if unemployment is cured by simultaneous monetary expansion within each country.

2. An International Agreement to minimize Fluctuations in Exchange Rates. When the main cause of exchange fluctuations has been removed by the conclusion of the agreement which we have just discussed, it will be proper for nations to consider the return to an international gold standard, which will stabilize completely the rates of exchange between their currencies. Such an international standard diminishes the uncertainty with which importers and exporters will otherwise have to trade. If the rate of exchange between the pound and the franc is fixed, the English exporter knows how much he will obtain in pounds for goods which he can sell at a certain price in francs, and the English importer knows how much he will have to pay in pounds for goods bought at a certain price in francs. And if there is a reliable international monetary standard, undesirable speculative movements of short-term funds from currency to currency will be greatly reduced. Englishmen will lend on short term to France only if the rate of interest in France is higher than the rate of interest in England; they will no longer buy francs for a short period because they expect the franc price of pounds to fall in the future.

But in spite of these advantages of the gold standard it may be better for many countries still to preserve some freedom in their exchange rates with other countries. For even if the international agreement to prevent unemployment by internal monetary policy is fully successful, some readjustment in the Balance of Payments between different countries will still be necessary—caused (e.g.) by a loss of export

markets by one country due to more rapid technical progress in the production of similar goods by a competing country. Such readjustments can be brought about without causing unemployment, either if the country whose receipts of foreign money have fallen can reduce its money wage-rates as quickly as its prices must fall, or if it allows its exchange rate to depreciate without any fall in its internal price-level. Countries should therefore return to the gold standard, only if money wage-rates are sufficiently flexible. This will be the case, either if there is perfect competition in the labour market without any bargains between employers and employed fixing wage-rates for long periods, in which case wage-rates will fall as soon as there is any unemployment, or if there is a completely socialized economic system which enables the government to lower all money wage-rates by fiat.

But there are countries, such as England, in which sufficient flexibility of money wage-rates does not exist; and these countries should not return to an unmodified gold standard. Between such countries a scheme of co-operation is needed to minimize fluctuations in exchange rates, based upon the following principles:

(i) that each country should be free to depreciate its exchange rate sufficiently to give it complete freedom to adopt an appropriate internal monetary policy without throwing its Balance of Payments out of equilibrium;

(ii) that each country should guarantee that it will not depreciate the exchange value of its currency—e.g. by purchases of foreign money through its Exchange Equalization Fund when these are not required to offset a speculative movement of short-term funds—by more than is sufficient to preserve equilibrium in its Balance of Payments; and

(iii) that speculative movements of short-term funds should be offset or prevented, so that they do not cause unnecessary fluctuations in exchange rates,

without any limitations of the purchase and sale of foreign currencies for other purposes.

There are many schemes of co-operation by which these objectives might be achieved. The following gives in outline one possible form of international agreement for this purpose:

1. All the countries concerned should agree to work a modified form of the gold standard. Each should agree to fix exchange rates by fixing the price, in terms of its own currency, at which its Central Bank would buy and sell gold, and by allowing the free import and export of gold. But these fixed exchange rates would be revised from time to time by periodical alterations in the Central Banks' buying and selling prices of gold.

2. The Governors of the Central Banks of each country should meet regularly at the Bank for International Settlements to revise the buying and selling prices of gold in terms of the currencies of their own countries. The prices should be chosen so as to fix those rates of exchange between the different currencies, which would enable each country's Balance of Payments to be in equilibrium in the absence of any movement of gold and of any speculative transfer of short-term funds.

3. To judge these prices correctly the officials of the Bank for International Settlements should study continually all information relating to the Balance of Payments between different countries. In particular, they should attempt to find out figures for the movement of gold reserves and of short-term funds.

4. Two principles should govern the revision of the buying and selling prices of gold in terms of the different currencies. In the first place, any country which was steadily losing gold should be allowed to raise its buying and selling price of gold relatively to the countries which were steadily importing gold. By a process of trial and error, based on the information at the disposal of the Bank for International Settlements, those gold prices could be found, which just removed the disequilibrium in the normal items in the Balance of

Payments. Secondly, all countries should raise their buying and selling prices of gold simultaneously if an increase in the total of Central Bank reserves was necessary to prevent a world-wide slump, and should lower their buying and selling prices of gold simultaneously, if a decrease in the total of reserves was necessary to prevent a world-wide boom.

5. The money profit or loss caused in any country by raising or lowering the money price of the gold reserves of that country should accrue to the government. The expenditure of such a profit by the government, or the increase in taxation necessary to finance such a loss, would help in the internal expansion or contraction of money demand.

6. Each Central Bank should agree to concentrate on an internal policy designed to preserve a high level of employment at home regardless of its exchange position, which would, if necessary, be adjusted by the appropriate revision of exchange rates.

7. This system will have the desired effect, only if the speculative movement of short-term funds were offset or prevented. For only if this is so will a movement of gold between two countries measure properly the degree to which the normal payments between the two countries are out of adjustment. To offset the speculative movement of short-term funds those directing the policy of the Bank for International Settlements should shift the assets of the Bank from one currency to another—e.g. they should sell American securities and with the dollars so obtained should purchase pounds to invest in English securities, in order to offset a movement of short-term funds from England to America. This would provide an International Exchange Equalization Fund. To finance this Fund each Central Bank should agree to deposit a certain sum with the Bank for International Settlements, and any loss or profit incurred by these exchange transactions should accrue to the different countries in proportion to the sums deposited by the Central Bank of each country.

8. Each country should give up the use of a national

Exchange Equalization Fund, but should aid the Bank for International Settlements in carrying out its policy of offsetting short-term capital movements.

9. Any country should be allowed to monopolize in a single institution all dealings in foreign exchange to prevent short-term capital movements, provided that it allowed the purchase and sale of foreign exchange for other purposes in unrestricted amounts at the current rates of exchange.

3. An International Agreement to reduce Barriers to International Trade. After the conclusion of the two monetary agreements, which we have just outlined, it would be practical politics to discuss tariff reductions again. Tariffs would no longer be necessary to provide employment, since this is provided by the first agreement. They would not be required to protect a country's exchange position, since this would be achieved by the second agreement; and countries could no longer hope to expand their markets at the expense of other countries by raising a tariff, since other countries would be permitted by the second agreement to retaliate by the depreciation of the exchange value of their currencies, if the tariff restricted their markets and so caused them to lose gold. Tariffs could only be retained either to protect an infant industry, which is perfectly legitimate, or to prevent the terms of trade from moving against the country imposing the tariff. But if all countries reduce their tariffs simultaneously, the demand for the products of each country will rise, so that there will be little or no change in the terms of trade between them; and any small change against any one country would be more than offset by the advantage accruing to that country from the larger volume of international trade.

As an ideal, all countries should simultaneously agree to a policy of complete Free Trade. In all probability, very many countries would not agree to a complete abolition of their tariffs, and some might be unwilling to agree to any significant tariff reductions. If universal agreement was prevented by the refusal of some states, a multilateral agreement should be formed among those states which were willing to reduce their tariffs.

At this point difficulties might arise from the existence of the 'most-favoured-nation' clause in existing commercial agreements. This clause lays it down that either of the parties to the commercial agreement will not levy duties on the goods of the other party higher than the duties levied on similar goods imported from any other country. In most commercial treaties between nations this clause is included. For example, a commercial treaty between England and Germany would probably contain a clause stating that England will not impose tariffs on German goods higher than the English tariff on similar goods imported from any other country, and vice versa. If, therefore, England reduces her tariff on certain imports from France, she is obliged to reduce her tariffs on German goods of the same kind by the same amount. If England and France attempt to form an agreement to lower their tariffs on each other's goods—both countries having signed treaties with Germany including the most-favoured-nation clause—England will have to reduce her tariffs on the goods of Germany as well as on the goods of France, and France will have to reduce her tariffs on German goods as well as on the goods of England. England and France might be able to agree to a simultaneous reduction of their tariffs on each other's goods, in such a way that the terms of trade between them would not be appreciably changed. But because of the most-favoured-nation clause they might be obliged to reduce their tariffs on the goods of many other countries without any simultaneous reduction in the tariffs imposed on their goods by these other countries, so that the terms of trade with the rest of the world might move considerably against them. Both countries might lose so much in the terms of trade with other countries, that it was not to their advantage to reduce their tariffs on each other's goods by agreement.

For this reason attempts to reduce tariffs by agreement among a limited number of countries might be unsuccessful. This difficulty can be surmounted, if the most-favoured-nation clause is modified so as to permit a limited number of

countries to reduce their tariffs on each other's goods without reducing their tariffs on the goods of those countries who are unwilling to come into the general agreement for tariff reductions. A group of countries might form a Free Trade or Low Tariff group, by agreeing to impose no prohibitions or quotas or tariffs over 10 per cent. on each other's goods. At the same time they might renew their commercial agreements with other countries to include a modified most-favoured-nation clause. A member of the Low Tariff group would promise not to impose a tariff on imports from a non-member, of a greater height than the tariff imposed on the goods of any other non-member. By these means each member of the Low Tariff group could reduce its tariffs on the goods of each other member without moving the terms of trade against it, but would be free to use its tariffs to bargain with those countries which refused to join the group.

The three agreements, which we have discussed, are fundamental to a sane world economic policy. It is as possible for a Socialist state to adhere to them as for a state in which a policy of *laisser-faire* is adopted. A Socialist state can agree

(1) to preserve full employment by speeding up its capital development at home or by increasing the expenditure of consumers at home;

(2) to sell its products at prices equal to their marginal costs at home and abroad;

(3) to allow the free purchase of imported consumption goods;

(4) to import raw materials and machinery when their price abroad is lower than their price at home; and

(5) to adjust its Balance of Payments by alterations in its exchange rate, or by raising or lowering all internal prices through a rise or fall in the general level of wages, when its imports and exports as determined on the above principles do not balance with the other normal items in its Balance of Payments.

Such agreements need not be universal to be effective.

They might, for example, be restricted to the continent of Europe. Even if only two important countries adopted them, they would be workable and would greatly ease the economic relations between them. England and America, for example, might agree

(1) to fix their buying and selling prices of gold;
(2) to revise these gold prices periodically, raising them to prevent a loss of gold and lowering them to stop an import of gold;
(3) to operate a joint Exchange Equalization Fund to offset movements of short-term funds between the pound and the dollar;
(4) to concentrate primarily on their internal policies and not on the extension of their external markets to cure unemployment; and
(5) not to impose quotas or any tariffs above 10 per cent. on each other's goods.

Any monetary or commercial agreements of this kind among a limited number of countries should be left open for the adherence on the same terms of any other country; for the larger the number of countries operating the reformed gold standard or becoming members of the Low Tariff group, the greater is the advantage to each individual member.

4. An Agreement to allow the Free International Movement of Capital. We come now to two agreements which are probably of relatively small importance, and which may be more difficult to attain. We have argued that—so long as countries always reduce interest rates to correspond to the true productivity of capital in order to preserve full employment, for which provision is made in the first international agreement—capital should be free to move from country to country in search of the highest yields, subject only to the restriction of short-term lending due to the expectation of variations in exchange rates, which is provided for in the second international agreement. Such international capital movements might be encouraged by the formation of an International Commission, whose task it should be to

provide authoritative information about the probable yield and security of investments of different kinds in different countries, and to assure by appropriate guarantees that every country had equally free access to invest money in undeveloped areas, in which the yield on capital was abnormally high. We have seen that a country may be unwilling to allow its citizens to lend freely abroad, because such foreign lending may turn the terms of trade against it; and this consideration may hinder the attainment of this agreement.

5. An Agreement to diminish the Restrictions on Immigration. The free immigration of population into a country in which standards of living are high is desirable from the international point of view, provided that the growth of population in the country, whose citizens are emigrating, is not excessive. But such migration may lower the standard of living in the country to which people are migrating. An international agreement on this subject will therefore have to discriminate against those countries in which the growth of population is uncontrolled, and will have to overcome the natural determination of other countries to allow no threat to their high standards of living. This agreement is therefore the most difficult to reach. But it would probably be of relatively minor importance if the first three agreements discussed in this chapter could be attained; for the countries with low standards would gain greatly from the greater freedom to trade with other countries and from the greater purchasing power in those other countries.

VIII

THE ECONOMIC CAUSES OF WAR

INTERNATIONAL agreements of the kind outlined in the last chapter would be effective not only in raising the standard of living in the countries concerned, but also in removing the economic causes of war between these countries. It is sometimes argued that it is an illusion to suppose that economic advantages can be obtained by any country through the prosecution of a successful war, because political domination over a particular territory does not in any way alter the fundamental economic conditions upon which the successful country relies for its welfare. If there were a universal system of Free Trade and of *laisser-faire* between all countries, the advantage which one country can gain from economic contacts with a particular territory would not depend upon political ownership of that territory. If, for example, there were free trade and freedom of movement of labour and capital between Germany and France, and between Germany and all African colonies, Germany would not be able to sell her goods more easily, to purchase her imports more cheaply, to invest money more profitably, or to find a more advantageous outlet for her population by the transference of the Saar from French to German political control, or by the transference of an African colony from British to German political control. While this argument is substantially correct in a world system of universal *laisser-faire*, yet even so it is not entirely true; and in a world in which there are innumerable international economic restrictions, it loses all its validity.

In order to see what economic causes of war exist, we may enumerate the following possible ways in which one country can gain economically by waging a successful war and so obtaining the political control over other territories:

1. By imposing a tribute the victor may gain economically, provided that it adopts an appropriate policy of internal monetary expansion, which enables it to import more than

it exports without thereby causing unemployment at home. In this case the receipt of the tribute will finance its excess of imports over exports, and it will be receiving part of its imports free and no longer in return for its own products.

2. Even if there is Free Trade, 'trade follows the flag' to some extent for reasons of sentiment and for more substantial reasons such as business connexions and language difficulties. In a territory politically controlled by Englishmen an English exporter may obtain a better price for an identical commodity than a Japanese exporter, and goods produced in this territory may be made available to the English at a somewhat cheaper price than to the Japanese; for if English is the official language of the territory and if the political administrators are English, it will be more convenient to deal with English than with Japanese firms. For similar reasons, even in the absence of restrictions upon labour migration and capital investment, Englishmen may obtain better information about the possibilities of earning high wages or interest in the territory, and will have a greater sense of security in migrating to the district or in investing capital in it.

3. There are certain backward territories, which are prevented from providing markets for other countries' goods, and from producing raw materials needed by other countries, and from furnishing opportunities for capital investment and labour immigration, by the fact that the inhabitants cannot furnish an efficient police to restrain banditry and to give that security which is essential for the economic development of these areas. In these circumstances political control by a more advanced nation would confer real economic advantages upon the advanced nations. If, however, such intervention were limited to the provision of an efficient police, this should not give rise to conflict between advanced nations, since all advanced nations would share in the gain to be obtained. Indeed, in these conditions, each advanced nation would hope that some other advanced nation would shoulder 'the white man's burden' and the cost of policing involved. Moreover, the inhabitants of the 'backward' nation would

also gain economically, if intervention were restricted to the suppression of banditry. But nationalist or racial feeling may cause them to resent the intervention, and this, combined with the economic advantage to the advanced nations, may be a cause of conflict between the backward and advanced territories.

4. When we turn our attention to legal restrictions imposed on the international movement of goods or of capital and labour, we discover much more substantial economic causes of conflict between nations. The use of preferential import and export duties, or of discriminatory quotas, to encourage the trade of a particular country provides the most obvious example. The import of Japanese as opposed to British cotton goods into the British West African colonies is restricted by quota; and this means that English cotton manufacturers gain at the expense both of Japanese cotton manufacturers, who are prevented from selling in this market, and also of the West African native, who is forced to purchase expensive English instead of cheap Japanese goods. If a low export duty is levied on the sale of a raw material by a British colony to the English market and a high duty is levied on sales to other markets, Englishmen will gain both at the expense of other countries, who are unable to obtain their raw material supplies so easily, and at the expense of the colonial producers, who are prevented from obtaining the higher price for their products which may be offered in markets other than the English market.

5. Restrictions on international trade, even if they do not discriminate in favour of a particular country, may yet make the political control of certain territories economically important. The transference of the Saar from French to German control is of advantage to Germany, if previously she had to sell her goods in the Saar over the French tariff. And if Germany relies upon imports of raw materials or foodstuffs, so that she *must* sell abroad to finance the import of essential commodities, it will be peculiarly important for her to obtain political control over other countries, in order to determine

the tariff policy of territories which might provide good markets for her exports.

6. One country may desire to obtain political control over another in order to remove restrictions on labour migration. Freedom of migration for the Japanese to Australia by reducing the numbers seeking work in Japan and by increasing the numbers seeking work in Australia might raise standards of living in Japan at the expense of the Australians and of future emigrants from Great Britain.

7. The restriction of capital movements by political control may enable one country to gain at the expense of others. When the present internal political troubles of China are solved, there will probably be very profitable fields of capital investment to develop the latent resources of that country. If Japan is able to limit such investment to the Japanese, she will gain at the expense of other potential investors, who will be unable to share in the abnormally high yields on capital, and at the expense of the Chinese, because this restriction in the amount to be borrowed by them will maintain the rates of interest which they must pay at a higher level than would otherwise be necessary.

8. The existence of natural or artificial monopolies in certain territories may give rise to conflict over their political control. Certain undertakings such as railways, telegraphs, and canals are bound to be monopolistic, because there is room for only one such service in one district. By controlling the price charged for the service of these monopolies the owners can gain abnormally high yields on the capital invested in them. Political pressure may be exercised by the governments of different countries to obtain the necessary concessions for their own investors; for once such a monopoly is started, the free flow of capital will not enable late-comers to share in the high yields, since there is room for only one such concern.

The formation of an artificial monopoly in a certain district may give rise to political intervention by another country. There is no reason in the nature of things why the production

of rubber should be monopolized; but if all producers of rubber agree to restrict output, they can make abnormally large profits by raising the price of rubber to consumers. The owners of capital invested in the production of rubber happen to be largely English, while Americans consume large quantities of rubber without being able to produce it. A rubber restriction scheme may therefore enable Englishmen to gain more as producers than they lose as consumers, while Americans only lose as consumers, so that the American government may intervene in order to force the English government to break such an artificial monopoly.

We have shown certain reasons which *may* lead to economic conflict between nations. It is, however, sometimes held that the organization of modern economic systems leads inevitably to war. This view is based on the belief that there is an inherent flaw in modern economic systems, causing less purchasing power to be distributed as income to consumers than is sufficient to purchase at cost the current output of goods. It is argued that this deficiency of purchasing power can be supplemented by one nation, only if it can extend its sales abroad without itself spending any more of its income on the goods of other countries. But since in this case some other nation must be buying from abroad more than it sells abroad, the degree to which one nation succeeds in curing its internal problem is an exact measure of the degree to which the problem is intensified for some other country. Thus, there arises a wild scramble for external markets, which, as we have just seen, can be obtained and preserved to a large extent by political control of other countries, based upon the exercise or the threat of force.

We have already dealt with this argument by implication. We have shown in Chapter I of Part I that there is no insuperable flaw in modern economic systems causing purchasing power to be deficient, although at any time a deficiency of purchasing power may lead to unemployment. But this can be met by either of two means. First, the country concerned may expand its markets at the expense of others

by exchange depreciation, by tariffs, and by any other measures which are designed to give it an abnormally large favourable Balance of Trade. Secondly, the country can expand its internal markets by the measures discussed in Part I, and so make up for the deficiency of internal purchasing power without any expansion at the expense of others; and indeed—while one country alone can do a great deal on these lines—if all countries adopt such a policy simultaneously, both the internal and the international markets of each country will expand at the same time.

We may admit that the search for foreign markets to cure unemployment is in the modern world the most potent economic cause of war. For this reason the first and second international agreements mentioned in the last chapter are of the utmost importance; for they enable each country to provide full employment without any possibility of expansion at each other's expense. The other economic causes of conflict enumerated in this chapter will be greatly diminished by means of the third, fourth, and fifth international agreements mentioned in the last chapter; for these agreements provide for Free Trade in commodities and for greater freedom of international movements of capital and labour; and we have seen that the most important economic causes of conflict between nations depend upon the effects of international restrictions upon the movement of goods and of factors of production. The agreements should, however, be supplemented in two ways. First, the 'open-door' policy must be guaranteed in all colonial possessions. The political control of 'backward' peoples will provide a fruitful economic cause of conflict, so long as the country exercising that control can impose discriminatory restrictions upon trade with and investment in those territories. The 'open-door' policy, embodying the principle that whatever country administers the colony, the economic opportunities provided by it shall be open on equal terms to all countries, is not only to the advantage of all other countries but also to the advantage of the natives of the colony, who can then borrow on the most

favourable terms and purchase in the cheapest and sell in the dearest markets. This principle may be extended by international conventions or by the administration of colonies under Mandates granted by the League of Nations, in which this principle is guaranteed. Secondly, the prices charged for products, which are the monopoly of certain territories, must be prevented by government control from being raised in excess of their cost through the formation of monopolistic schemes designed to restrict their supply. International conventions should be formed for this purpose and administered with suitable guarantees.

But above all it is necessary that countries should meet the problem of unemployment not by developing a favourable Balance of Trade at the expense of others, but by internal expansion, carried out if possible simultaneously in all countries; for the former method, if universally adopted, must lead to general impoverishment and eventually to war, whereas by the latter method the way is opened to prosperity and peace.

NOTE ON THE TREND OF POPULATION

THE purpose of this note is to outline the best method of measuring the tendency of a population to increase or decrease in numbers.

Apart from immigration and emigration, the increase of a population is equal to the excess of births over deaths in the community. But the excess of the birth-rate over the death-rate is a very misleading measure of the fundamental trend of a population. In this country at the present time it happens that an abnormally large proportion of the population is between the ages of 20 and 50. This means that an abnormally large proportion of the population is made up of women of child-bearing age, while an abnormally small proportion of the population is of the age—either very young or very old—at which people are most liable to die. In consequence at present births exceed deaths, although the number of children being born is actually insufficient to replace their parents, so that there is a fundamental tendency for the population to decline. In a few years' time, when the present abnormally large number of women of child-bearing age grow old, births will decline and deaths will rise, and the population will begin to fall.

The most satisfactory measure of the trend of the population is to be found in the 'net reproduction rate'; the calculation of this rate is illustrated in Table XVI, the figures in which are chosen arbitrarily for the purposes of simple illustration.

TABLE XVI

The Net Reproduction Rate

Age-groups A	*Number of female babies born to 1,000 women in each age-group* B	*Number of survivors out of 1,000 female babies* C	*Number of female babies reproduced by 1,000 female babies* D
20–25	200	900	180
25–30	250	800	200
30–35	250	700	175
35–40	200	600	120
Total . .	900	..	675

If we start with 1,000 female babies and then estimate how many female babies these 1,000 will leave behind them as they grow up and pass through the child-bearing age, we can tell whether, at present fertility and mortality rates, there is a fundamental tendency for the population to reproduce itself or not. If 1,000 female babies will leave only 750 female babies behind them, then the population is reproducing only $\frac{3}{4}$ of itself in each generation and the net reproduction rate is said to be 0·75. If they will leave more than 1,000 behind them, then the net reproduction rate is greater than 1, and there is a fundamental tendency for the population to grow.

For the purposes of simplification we suppose in Table XVI that the child-bearing age is from 20 to 40; and column A shows these child-bearing years divided into four groups. The figures in column B show the number of female children that are born at present fertility rates to each 1,000 women as they pass through the different child-bearing ages of column A. Thus we suppose that 1,000 women bear 250 children as they pass through the ages 30 to 35, and 200 children as they pass through the ages 35 to 40. If we sum up the figures in column B, we find the number of female babies which will be left behind by 1,000 female infants, as they pass through life, *provided that none of these 1,000 infants die before the end of the child-bearing age*. In Table XVI this total is 900; and in consequence the *gross* reproduction rate is said to be 0·9, which means that in the absence of any death before the end of the child-bearing period the population will at present fertility rates reproduce $\frac{9}{10}$ of itself in each generation. But we must next allow for the fact that some female infants will never reach child-bearing age, while others will not complete their child-bearing period. The figures in column C show what proportion of female infants will, with the existing expectation of life, survive to each of the child-bearing ages. Thus we suppose that out of 1,000 female infants, 900 will survive to the ages 20 to 25, while only 700 will survive to the ages 30 to 35. The figures in column D show how many female babies will be left behind by 1,000 female babies, as these 1,000 babies grow up and, allowing for death on the way, pass through the child-bearing age. The figures in column D are obtained from those in columns B and C in the following way. Column C tells us that out of 1,000 female infants only 900 will survive to the ages 20 to 25; and since column B

tells us that 1,000 women passing through this age-group would bear 200 female infants, we may reckon that 900 passing through this age-group will bear $\frac{900}{1,000} \times 200$ or 180 female babies, which figure is shown in column D. The sum of the figures in column D shows the number of female infants which will be left behind by 1,000 female babies, as these 1,000 babies grow up and pass through the child-bearing age, some dying and others marrying and bearing children. In Table XVI 1,000 female babies would leave only 675 female babies behind them, which means that at the assumed fertility and mortality rates each generation of mothers is reproducing only 67½ per cent. of itself. In this case the net reproduction rate is said to be 0·675.

We can see now how unsatisfactory a comparison of the birth-rate and death-rate may be as a measure of the trend of population. In this country the net reproduction rate is about 0·75, which means that each generation is reproducing only ¾ of itself, although there is still some excess of births over deaths owing to the fact that an abnormally large proportion of the population is of the child-bearing age. This means that if rates of fertility and mortality continue at their present level, the population will soon start on a rapid and continuous decline.

This discussion may be applied to the choice of a population policy. It is the net reproduction rate and not the balance between the birth-rate and the death-rate which shows the real tendency of the population to rise or to fall; and this, together with the test of over- and under-population outlined in Chapter II of Part IV, will show whether the population already has a tendency to move towards or away from the optimum size. If the net reproduction rate shows a tendency for the population to move away from the optimum, immediate steps are necessary to counteract this population trend. If, however, the net reproduction rate shows that the trend of population is already in the direction of the optimum size, no immediate steps are necessary to exaggerate this trend. Indeed, it must always be remembered that the population will continue to grow or to fall without limit so long as the net reproduction rate is above or below one. Suppose, for example, that the population is above the optimum, but that the net reproduction rate is below one. The population already shows a tendency to fall towards the optimum, but this fall will be continued far beyond the optimum unless measures

are taken to raise the net reproduction rate, so that it will have risen to one by the time that the optimum population is reached. In such circumstances it would be appropriate to encourage an increase rather than a decrease in the size of the family, since the desired fall in numbers towards the optimum will occur in any case and may proceed too far unless appropriate measures are taken.

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