

JOHN MAYNARD KEYNES

# THE GENERAL THEORY

An economist of world renown, JOHN MAYNARD KEYNES was born in 1883 and educated at King's College, Cambridge. His two great works, *A Treatise on Money* (1930) and the revolutionary *General Theory of Employment, Interest, and Money* (1936), were inspired by the employment crisis of the late 1920s. As a pioneer in theory of full employment, Keynes had a profound influence on Roosevelt's New Deal and on the creation of such organizations as the International Monetary Fund, and his thinking continues to serve as the basis for classic economic theory today. Keynes was, in addition, a man of letters and a writer of consummate skill. He died in 1946.

excerpt - chapters 16, 17, 18 pff

What books published during the past four decades most significantly altered the direction of our society? Which may have a substantial impact on public thought and action in the years ahead? Twenty-seven historians, economists, political analysts, educators, social scientists, and philosophers pondered these questions. . . . There is the widest agreement on *The General Theory of Employment, Interest, and Money*, by John Maynard Keynes." — *Saturday Review*

"*The General Theory* provided the rationale for government spending to achieve economic recovery. It revolutionized business-cycle theory and established the basic framework for modern macroeconomic analysis, including growth economics. The effects of this work have been aptly called the 'Keynesian Revolution.'"

— Arthur E. Burns

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ECONOMICS

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JOHN MAYNARD KEYNES

# THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY

"I can think of no single book that has so changed the conception held by economists as to the working of the capitalist system"  
— Robert L. Heilbroner

experimental. In this book, even more perhaps than in writing my *Treatise on Money*, I have depended on the constant advice and constructive criticism of Mr. R. F. Kahn. There is a great deal in this book which would not have taken the shape it has except at his suggestion. I have also had much help from Mrs. Joan Robinson, Mr. R. G. Hawtrey and Mr. R. F. Harrod, who have read the whole of the proof-sheets. The index has been compiled by Mr. D. M. Bensusan-Butt of King's College, Cambridge.

The composition of this book has been for the author a long struggle of escape, and so must the reading of it be for most readers if the author's assault upon them is to be successful,—a struggle of escape from habitual modes of thought and expression. The ideas which are here expressed so laboriously are extremely simple and should be obvious. The difficulty lies, not in the new ideas, but in escaping from the old ones, which ramify, for those brought up as most of us have been, into every corner of our minds.

J. M. KEYNES

December 13, 1935

Note: Chapters 1-15 develop Keynes 'General Theory' concluding with his Chapter 16, "Observations on the Nature of Capital" including the natural limits of money. The following two chapters (17 & 18) recap his model of earlier chapters. Following chapters (19-24) discuss implications for wages and prices and notes. - So, Ch 16 is then the conclusion to his introducing his theory, pointing to the need to change his models at the natural end of growth [pfh 2011]

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BOOK I

INTRODUCTION

## CHAPTER 16

SUNDRY OBSERVATIONS ON THE NATURE OF  
CAPITAL

## I



AN act of individual saving means—so to speak—a decision not to have dinner to-day. But it does *not* necessitate a decision to have dinner or to buy a pair of boots a week hence or a year hence or to consume any specified thing at any specified date. Thus it depresses the business of preparing to-day's dinner without stimulating the business of making ready for some future act of consumption. It is not a substitution of future consumption-demand for present consumption-demand,—it is a net diminution of such demand. Moreover, the expectation of future consumption is so largely based on current experience of present consumption that a reduction in the latter is likely to depress the former, with the result that the act of saving will not merely depress the price of consumption-goods and leave the marginal efficiency of existing capital unaffected, but may actually tend to depress the latter also. In this event it may reduce present investment-demand as well as present consumption-demand.

If saving consisted not merely in abstaining from present consumption but in placing simultaneously a specific order for future consumption, the effect might indeed be different. For in that case the expectation of some future yield from investment would be improved, and the resources released from preparing for present

consumption could be turned over to preparing for the future consumption. Not that they necessarily would be, even in this case, on a scale *equal* to the amount of resources released; since the desired interval of delay might require a method of production so inconveniently "roundabout" as to have an efficiency well below the current rate of interest, with the result that the favourable effect on employment of the forward order for consumption would eventuate not at once but at some subsequent date, so that the *immediate* effect of the saving would still be adverse to employment. In any case, however, an individual decision to save does not, in actual fact, involve the placing of any specific forward order for consumption, but merely the cancellation of a present order. Thus, since the expectation of consumption is the only *raison d'être* of employment, there should be nothing paradoxical in the conclusion that a diminished propensity to consume has *cet. par.* a depressing effect on employment.

The trouble arises, therefore, because the act of saving implies, not a substitution for present consumption of some specific additional consumption which requires for its preparation just as much immediate economic activity as would have been required by present consumption equal in value to the sum saved, but a desire for "wealth" as such, that is for a potentiality of consuming an unspecified article at an unspecified time. The absurd, though almost universal, idea that an act of individual saving is just as good for effective demand as an act of individual consumption, has been fostered by the fallacy, much more specious than the conclusion derived from it, that an increased desire to hold wealth, being much the same thing as an increased desire to hold investments, must, by increasing the demand for investments, provide a stimulus to their production; so that current investment is promoted by individual saving to the same extent as present consumption is diminished.

It is of this fallacy that it is most difficult to disabuse men's minds. It comes from believing that the owner of wealth desires a capital-asset *as such*, whereas what he really desires is its *prospective yield*. Now, prospective yield wholly depends on the expectation of future effective demand in relation to future conditions of supply. If, therefore, an act of saving does nothing to improve prospective yield, it does nothing to stimulate investment. Moreover, in order than an individual saver may attain his desired goal of the ownership of wealth, it is not necessary that a *new* capital-asset should be produced wherewith to satisfy him. The mere act of saving by one individual, being *two-sided* as we have shown above, forces some other individual to transfer to him some article of wealth old or new. Every act of saving involves a "forced" inevitable transfer of wealth to him who saves, though he in his turn may suffer from the saving of others. These transfers of wealth do not require the creation of new wealth—indeed, as we have seen, they may be actively inimical to it. The creation of new wealth wholly depends on the prospective yield of the new wealth reaching the standard set by the current rate of interest. The prospective yield of the marginal new investment is not increased by the fact that someone wishes to increase his wealth, since the prospective yield of the marginal new investment depends on the expectation of a demand for a specific article at a specific date.

Nor do we avoid this conclusion by arguing that what the owner of wealth desires is not a given prospective yield but the best available prospective yield, so that an increased desire to own wealth reduces the prospective yield with which the producers of new investment have to be content. For this overlooks the fact that there is always an alternative to the ownership of real capital-assets, namely the ownership of money and debts; so that the prospective yield with which

the producers of new investment have to be content cannot fall below the standard set by the current rate of interest. And the current rate of interest depends, as we have seen, not on the strength of the desire to hold wealth, but on the strengths of the desires to hold it in liquid and in illiquid forms respectively, coupled with the amount of the supply of wealth in the one form relatively to the supply of it in the other. If the reader still finds himself perplexed, let him ask himself why, the quantity of money being unchanged, a fresh act of saving should diminish the sum which it is desired to keep in liquid form at the existing rate of interest.

Certain deeper perplexities, which may arise when we try to probe still further into the whys and wherefores, will be considered in the next chapter.

## II

It is much preferable to speak of capital as having a yield over the course of its life in excess of its original cost, than as being *productive*. For the only reason why an asset offers a prospect of yielding during its life services having an aggregate value greater than its initial supply price is because it is *scarce*; and it is kept scarce because of the competition of the rate of interest on money. If capital becomes less scarce, the excess yield will diminish, without its having become less productive—at least in the physical sense.

I sympathise, therefore, with the pre-classical doctrine that everything is *produced* by *labour*, aided by what used to be called art and is now called technique, by natural resources which are free or cost a rent according to their scarcity or abundance, and by the results of past labour, embodied in assets, which also command a price according to their scarcity or abundance. It is preferable to regard labour, including, of course, the personal services of the entrepreneur and his assistants,

as the sole factor of production, operating in a given environment of technique, natural resources, capital equipment and effective demand. This partly explains why we have been able to take the unit of labour as the sole physical unit which we require in our economic system, apart from units of money and of time.

It is true that some lengthy or roundabout processes are physically efficient. But so are some short processes. Lengthy processes are not physically efficient because they are long. Some, probably most, lengthy processes would be physically very inefficient, for there are such things as spoiling or wasting with time.<sup>1</sup> With a given labour force there is a definite limit to the quantity of labour embodied in roundabout processes which can be used to advantage. Apart from other considerations, there must be a due proportion between the amount of labour employed in making machines and the amount which will be employed in using them. The ultimate quantity of *value* will not increase indefinitely, relatively to the quantity of labour employed, as the processes adopted become more and more roundabout, even if their physical efficiency is still increasing. Only if the desire to postpone consumption were strong enough to produce a situation in which full employment required a volume of investment so great as to involve a negative marginal efficiency of capital, would a process become advantageous merely because it was lengthy; in which event we should employ physically *inefficient* processes, provided they were sufficiently lengthy for the gain from postponement to outweigh their inefficiency. We should in fact have a situation in which *short* processes would have to be kept sufficiently scarce for their physical efficiency to outweigh the disadvantage of the early delivery of their product. A correct theory, therefore, must be reversible so as to be able to cover the cases of the marginal efficiency of capital corresponding

<sup>1</sup> Cf. Marshall's note on Böhm-Bawerk, *Principles*, p. 583.

either to a positive or to a negative rate of interest; and it is, I think, only the scarcity theory outlined above which is capable of this.

Moreover there are all sorts of reasons why various kinds of services and facilities are scarce and therefore expensive relatively to the quantity of labour involved. For example, smelly processes command a higher reward, because people will not undertake them otherwise. So do risky processes. But we do not devise a productivity theory of smelly or risky processes as such. In short, not all labour is accomplished in equally agreeable attendant circumstances; and conditions of equilibrium require that articles produced in less agreeable attendant circumstances (characterised by smelliness, risk or the lapse of time) must be kept sufficiently scarce to command a higher price. But if the lapse of time becomes an agreeable attendant circumstance, which is a quite possible case and already holds for many individuals, then, as I have said above it is the short processes which must be kept sufficiently scarce.

Given the optimum amount of roundaboutness, we shall, of course, select the most efficient roundabout processes which we can find up to the required aggregate. But the optimum amount itself should be such as to provide at the appropriate dates for that part of consumers' demand which it is desired to defer. In optimum conditions, that is to say, production should be so organised as to produce in the most efficient manner compatible with delivery at the dates at which consumers' demand is expected to become effective. It is no use to produce for delivery at a different date from this, even though the physical output could be increased by changing the date of delivery;—except in so far as the prospect of a larger meal, so to speak, induces the consumer to anticipate or postpone the hour of dinner. If, after hearing full particulars of the meals he can get by fixing dinner at

different hours, the consumer is expected to decide in favour of 8 o'clock, it is the business of the cook to provide the best dinner he can for service at that hour, irrespective of whether 7.30, 8 o'clock or 8.30 is the hour which would suit him best if time counted for nothing, one way or the other, and his only task was to produce the absolutely best dinner. In some phases of society it may be that we could get physically better dinners by dining later than we do; but it is equally conceivable in other phases that we could get better dinners by dining earlier. Our theory must, as I have said above, be applicable to both contingencies.

If the rate of interest were zero, there would be an optimum interval for any given article between the average date of input and the date of consumption, for which labour cost would be a minimum;—a shorter process of production would be less efficient technically, whilst a longer process would also be less efficient by reason of storage costs and deterioration. If, however, the rate of interest exceeds zero, a new element of cost is introduced which increases with the length of the process, so that the optimum interval will be shortened, and the current input to provide for the eventual delivery of the article will have to be curtailed until the prospective price has increased sufficiently to cover the increased cost—a cost which will be increased both by the interest charges and also by the diminished efficiency of the shorter method of production. Whilst if the rate of interest falls below zero (assuming this to be technically possible), the opposite is the case. Given the prospective consumers' demand, current input to-day has to compete, so to speak, with the alternative of starting input at a later date; and, consequently, current input will only be worth while when the greater cheapness, by reason of greater technical efficiency or prospective price changes, of producing later on rather than now, is insufficient to offset the smaller return from negative

interest. In the case of the great majority of articles it would involve great technical *inefficiency* to start up their input more than a very modest length of time ahead of their prospective consumption. Thus even if the rate of interest is zero, there is a strict limit to the proportion of prospective consumers' demand which it is profitable to begin providing for in advance; and, as the rate of interest rises, the proportion of the prospective consumers' demand for which it pays to produce to-day shrinks *pari passu*.

### III

We have seen that capital has to be kept scarce enough in the long-period to have a marginal efficiency which is at least equal to the rate of interest for a period equal to the life of the capital, as determined by psychological and institutional conditions. What would this involve for a society which finds itself so well equipped with capital that its marginal efficiency is zero and would be negative with any additional investment; yet possessing a monetary system, such that money will "keep" and involves negligible costs of storage and safe custody, with the result that in practice interest cannot be negative; and, in conditions of full employment, disposed to save?

If, in such circumstances, we start from a position of full employment, entrepreneurs will necessarily make losses if they continue to offer employment on a scale which will utilise the whole of the existing stock of capital. Hence the stock of capital and the level of employment will have to shrink until the community becomes so impoverished that the aggregate of saving has become zero, the positive saving of some individuals or groups being offset by the negative saving of others. Thus for a society such as we have supposed, the position of equilibrium, under conditions of *laissez-faire*, will be one in which employment is low enough



and the standard of life sufficiently miserable to bring savings to zero. More probably there will be a cyclical movement round this equilibrium position. For if there is still room for uncertainty about the future, the marginal efficiency of capital will occasionally rise above zero leading to a "boom", and in the succeeding "slump" the stock of capital may fall for a time below the level which will yield a marginal efficiency of zero in the long run. Assuming correct foresight, the equilibrium stock of capital which will have a marginal efficiency of precisely zero will, of course, be a smaller stock than would correspond to full employment of the available labour; for it will be the equipment which corresponds to that proportion of unemployment which ensures zero saving.

The only alternative position of equilibrium would be given by a situation in which a stock of capital sufficiently great to have a marginal efficiency of zero also represents an amount of wealth sufficiently great to satiate to the full the aggregate desire on the part of the public to make provision for the future, even with full employment, in circumstances where no bonus is obtainable in the form of interest. It would, however, be an unlikely coincidence that the propensity to save in conditions of full employment should become satisfied just at the point where the stock of capital reaches the level where its marginal efficiency is zero. If, therefore, this more favourable possibility comes to the rescue, it will probably take effect, not just at the point where the rate of interest is vanishing, but at some previous point during the gradual decline of the rate of interest.

We have assumed so far an institutional factor which prevents the rate of interest from being negative, in the shape of money which has negligible carrying costs. In fact, however, institutional and psychological factors are present which set a limit much above zero to the practicable decline in the rate of interest. In

particular the costs of bringing borrowers and lenders together and uncertainty as to the future of the rate of interest, which we have examined above, set a lower limit, which in present circumstances may perhaps be as high as 2 or 2½ per cent. on long term. If this should prove correct, the awkward possibilities of an increasing stock of wealth, in conditions where the rate of interest can fall no further under *laissez-faire*, may soon be realised in actual experience. Moreover if the minimum level to which it is practicable to bring the rate of interest is appreciably above zero, there is less likelihood of the aggregate desire to accumulate wealth being satiated before the rate of interest has reached its minimum level.

The post-war experiences of Great Britain and the United States are, indeed, actual examples of how an accumulation of wealth, so large that its marginal efficiency has fallen more rapidly than the rate of interest can fall in the face of the prevailing institutional and psychological factors, can interfere, in conditions mainly of *laissez-faire*, with a reasonable level of employment and with the standard of life which the technical conditions of production are capable of furnishing.

It follows that of two equal communities, having the same technique but different stocks of capital, the community with the smaller stock of capital may be able for the time being to enjoy a higher standard of life than the community with the larger stock; though when the poorer community has caught up the rich—as, presumably, it eventually will—then both alike will suffer the fate of Midas. This disturbing conclusion depends, of course, on the assumption that the propensity to consume and the rate of investment are not deliberately controlled in the social interest but are mainly left to the influences of *laissez-faire*.

If—for whatever reason—the rate of interest cannot fall as fast as the marginal efficiency of capital would fall with a rate of accumulation corresponding to what

the community would choose to save at a rate of interest equal to the marginal efficiency of capital in conditions of full employment, then even a diversion of the desire to hold wealth towards assets, which will in fact yield no economic fruits whatever, will increase economic well-being. In so far as millionaires find their satisfaction in building mighty mansions to contain their bodies when alive and pyramids to shelter them after death, or, repenting of their sins, erect cathedrals and endow monasteries or foreign missions, the day when abundance of capital will interfere with abundance of output may be postponed. "To dig holes in the ground," paid for out of savings, will increase, not only employment, but the real national dividend of useful goods and services. It is not reasonable, however, that a sensible community should be content to remain dependent on such fortuitous and often wasteful mitigations when once we understand the influences upon which effective demand depends.

## IV

Let us assume that steps are taken to ensure that the rate of interest is consistent with the rate of investment which corresponds to full employment. Let us assume, further, that State action enters in as a balancing factor to provide that the growth of capital equipment shall be such as to approach saturation-point at a rate which does not put a disproportionate burden on the standard of life of the present generation.

On such assumptions I should guess that a properly run community equipped with modern technical resources, of which the population is not increasing rapidly, ought to be able to bring down the marginal efficiency of capital in equilibrium approximately to zero within a single generation; so that we should attain the conditions of a quasi-stationary community where change and progress would result only from

changes in technique, taste, population and institutions, with the products of capital selling at a price proportioned to the labour, etc., embodied in them on just the same principles as govern the prices of consumption-goods into which capital-charges enter in an insignificant degree.

If I am right in supposing it to be comparatively easy to make capital-goods so abundant that the marginal efficiency of capital is zero, this may be the most sensible way of gradually getting rid of many of the objectionable features of capitalism. For a little reflection will show what enormous social changes would result from a gradual disappearance of a rate of return on accumulated wealth. A man would still be free to accumulate his earned income with a view to spending it at a later date. But his accumulation would not grow. He would simply be in the position of Pope's father, who, when he retired from business, carried a chest of guineas with him to his villa at Twickenham and met his household expenses from it as required.

Though the rentier would disappear, there would still be room, nevertheless, for enterprise and skill in the estimation of prospective yields about which opinions could differ. For the above relates primarily to the pure rate of interest apart from any allowance for risk and the like, and not to the gross yield of assets including the return in respect of risk. Thus unless the pure rate of interest were to be held at a negative figure, there would still be a positive yield to skilled investment in individual assets having a doubtful prospective yield. Provided there was some measurable unwillingness to undertake risk, there would also be a positive net yield from the aggregate of such assets over a period of time. But it is not unlikely that, in such circumstances, the eagerness to obtain a yield from doubtful investments might be such that they would show in the aggregate a *negative* net yield.

## CHAPTER 17

## THE ESSENTIAL PROPERTIES OF INTEREST AND MONEY

## I

It seems, then, that the *rate of interest on money* plays a peculiar part in setting a limit to the level of employment, since it sets a standard to which the marginal efficiency of a capital-asset must attain if it is to be newly produced. That this should be so, is, at first sight, most perplexing. It is natural to enquire wherein the peculiarity of money lies as distinct from other assets, whether it is only money which has a rate of interest, and what would happen in a non-monetary economy. Until we have answered these questions, the full significance of our theory will not be clear.

The money-rate of interest—we may remind the reader—is nothing more than the percentage excess of a sum of money contracted for forward delivery, *e.g.* a year hence, over what we may call the “spot” or cash price of the sum thus contracted for forward delivery. It would seem, therefore, that for every kind of capital-asset there must be an analogue of the rate of interest on money. For there is a definite quantity of (*e.g.*) wheat to be delivered a year hence which has the same exchange value to-day as 100 quarters of wheat for “spot” delivery. If the former quantity is 105 quarters, we may say that the wheat-rate of interest is 5 per cent. per annum; and if it is 95 quarters, that it is *minus* 5 per cent. per annum. Thus for every durable commodity we have a rate of interest in terms of itself,—a

wheat-rate of interest, a copper-rate of interest, a house-rate of interest, even a steel-plant-rate of interest.

The difference between the “future” and “spot” contracts for a commodity, such as wheat, which are quoted in the market, bears a definite relation to the wheat-rate of interest, but, since the future contract is quoted in terms of money for forward delivery and not in terms of wheat for spot delivery, it also brings in the money-rate of interest. The exact relationship is as follows:

Let us suppose that the spot price of wheat is £100 per 100 quarters, that the price of the “future” contract for wheat for delivery a year hence is £107 per 100 quarters, and that the money-rate of interest is 5 per cent. ; what is the wheat-rate of interest? £100 spot will buy £105 for forward delivery, and £105 for forward delivery will buy  $\frac{100}{1.05} \cdot 100 (=98)$  quarters for forward delivery. Alternatively £100 spot will buy 100 quarters of wheat for spot delivery. Thus 100 quarters of wheat for spot delivery will buy 98 quarters for forward delivery. It follows that the wheat-rate of interest is *minus* 2 per cent. per annum.<sup>1</sup>

It follows from this that there is no reason why their rates of interest should be the same for different commodities,—why the wheat-rate of interest should be equal to the copper-rate of interest. For the relation between the “spot” and “future” contracts, as quoted in the market, is notoriously different for different commodities. This, we shall find, will lead us to the clue we are seeking. For it may be that it is the *greatest* of the own-rates of interest (as we may call them) which rules the roost (because it is the greatest of these rates that the marginal efficiency of a capital-asset must attain if it is to be newly produced); and that there are reasons why it is the money-rate of interest which is often the greatest (because, as we shall find, certain

<sup>1</sup> This relationship was first pointed out by Mr. Sraffa, *Economic Journal*, March 1932, p. 50.

forces, which operate to reduce the own-rates of interest of other assets, do not operate in the case of money).

It may be added that, just as there are differing commodity-rates of interest at any time, so also exchange dealers are familiar with the fact that the rate of interest is not even the same in terms of two different moneys, e.g. sterling and dollars. For here also the difference between the "spot" and "future" contracts for a foreign money in terms of sterling are not, as a rule, the same for different foreign moneys.

Now each of these commodity standards offers us the same facility as money for measuring the marginal efficiency of capital. For we can take any commodity we choose, e.g. wheat; calculate the wheat-value of the prospective yields of any capital asset; and the rate of discount which makes the present value of this series of wheat annuities equal to the present supply price of the asset in terms of wheat gives us the marginal efficiency of the asset in terms of wheat. If no change is expected in the relative value of two alternative standards, then the marginal efficiency of a capital-asset will be the same in whichever of the two standards it is measured, since the numerator and denominator of the fraction which leads up to the marginal efficiency will be changed in the same proportion. If, however, one of the alternative standards is expected to change in value in terms of the other, the marginal efficiencies of capital-assets will be changed by the same percentage, according to which standard they are measured in. To illustrate this let us take the simplest case where wheat, one of the alternative standards, is expected to appreciate at a steady rate of  $a$  per cent. per annum in terms of money; the marginal efficiency of an asset, which is  $x$  per cent. in terms of money, will then be  $x - a$  per cent. in terms of wheat. Since the marginal efficiencies of all capital-assets will be altered by the same amount, it follows that their order of magnitude will be the same irrespective of the standard which is selected.

If there were some composite commodity which could be regarded strictly speaking as representative, we could regard the rate of interest and the marginal efficiency of capital in terms of this commodity as being, in a sense, uniquely *the* rate of interest and *the* marginal efficiency of capital. But there are, of course, the same obstacles in the way of this as there are to setting up a unique standard of value.

So far, therefore, the money-rate of interest has no uniqueness compared with other rates of interest, but is on precisely the same footing. Wherein, then, lies the peculiarity of the money-rate of interest which gives it the predominating practical importance attributed to it in the preceding chapters? Why should the volume of output and employment be more intimately bound up with the money-rate of interest than with the wheat-rate of interest or the house-rate of interest?

## II

Let us consider what the various commodity-rates of interest over a period of (say) a year are likely to be for different types of assets. Since we are taking each commodity in turn as the standard, the returns on each commodity must be reckoned in this context as being measured in terms of itself.

There are three attributes which different types of assets possess in different degrees; namely, as follows:

- (i) Some assets produce a yield or output  $q$ , measured in terms of themselves, by assisting some process of production or supplying services to a consumer.

- (ii) Most assets, except money, suffer some wastage or involve some cost through the mere passage of time (apart from any change in their relative value), irrespective of their being used to produce a yield; i.e. they involve a carrying cost  $c$  measured in terms of themselves. It does not matter for our present pur-

pose exactly where we draw the line between the costs which we deduct before calculating  $q$  and those which we include in  $c$ , since in what follows we shall be exclusively concerned with  $q - c$ .

(iii) Finally, the power of disposal over an asset during a period may offer a potential convenience or security, which is not equal for assets of different kinds, though the assets themselves are of equal initial value. There is, so to speak, nothing to show for this at the end of the period in the shape of output; yet it is something for which people are ready to pay something. The amount (measured in terms of itself) which they are willing to pay for the potential convenience or security given by this power of disposal (exclusive of yield or carrying cost attaching to the asset), we shall call its liquidity-premium  $l$ .

It follows that the total return expected from the ownership of an asset over a period is equal to its yield *minus* its carrying cost *plus* its liquidity-premium, *i.e.* to  $q - c + l$ . That is to say,  $q - c + l$  is the own-rate of interest of any commodity, where  $q$ ,  $c$  and  $l$  are measured in terms of itself as the standard.

It is characteristic of instrumental capital (*e.g.* a machine) or of consumption capital (*e.g.* a house) which is in use, that its yield should normally exceed its carrying cost, whilst its liquidity-premium is probably negligible; of a stock of liquid goods or of surplus laid-up instrumental or consumption capital that it should incur a carrying cost in terms of itself without any yield to set off against it, the liquidity-premium in this case also being usually negligible as soon as stocks exceed a moderate level, though capable of being significant in special circumstances; and of money that its yield is *nil*, and its carrying cost negligible, but its liquidity-premium substantial. Different commodities may, indeed, have differing degrees of liquidity-premium amongst themselves, and money may incur some degree of carrying costs, *e.g.* for safe

custody. But it is an essential difference between money and all (or most) other assets that in the case of money its liquidity-premium much exceeds its carrying cost, whereas in the case of other assets their carrying cost much exceeds their liquidity-premium. Let us, for purposes of illustration, assume that on houses the yield is  $q_1$  and the carrying cost and liquidity-premium negligible; that on wheat the carrying cost is  $c_2$  and the yield and liquidity-premium negligible; and that on money the liquidity-premium is  $l_3$  and the yield and carrying cost negligible. That is to say,  $q_1$  is the house-rate of interest,  $-c_2$  the wheat-rate of interest, and  $l_3$  the money-rate of interest.

To determine the relationships between the expected returns on different types of assets which are consistent with equilibrium, we must also know what the changes in relative values during the year are expected to be. Taking money (which need only be a money of account for this purpose, and we could equally well take wheat) as our standard of measurement, let the expected percentage appreciation (or depreciation) of houses be  $a_1$  and of wheat  $a_2$ .  $q_1$ ,  $-c_2$  and  $l_3$  we have called the own-rates of interest of houses, wheat and money in terms of themselves as the standard of value; *i.e.*  $q_1$  is the house-rate of interest in terms of houses,  $-c_2$  is the wheat-rate of interest in terms of wheat, and  $l_3$  is the money-rate of interest in terms of money. It will also be useful to call  $a_1 + q_1$ ,  $a_2 - c_2$  and  $l_3$ , which stand for the same quantities reduced to money as the standard of value, the house-rate of money-interest, the wheat-rate of money-interest and the money-rate of money-interest respectively. With this notation it is easy to see that the demand of wealth-owners will be directed to houses, to wheat or to money, according as  $a_1 + q_1$  or  $a_2 - c_2$  or  $l_3$  is greatest. Thus in equilibrium the demand-prices of houses and wheat in terms of money will be such that there is nothing to choose in the way of advantage between the alter-

natives;—*i.e.*  $a_1 + q_1$ ,  $a_2 - c_2$  and  $l_3$  will be *equal*. The choice of the standard of value will make no difference to this result because a shift from one standard to another will change all the terms equally, *i.e.* by an amount equal to the expected rate of appreciation (or depreciation) of the new standard in terms of the old.

Now those assets of which the normal supply-price is less than the demand-price will be newly produced; and these will be those assets of which the marginal efficiency would be greater (on the basis of their normal supply-price) than the rate of interest (both being measured in the same standard of value whatever it is). As the stock of the assets, which begin by having a marginal efficiency at least equal to the rate of interest, is increased, their marginal efficiency (for reasons, sufficiently obvious, already given) tends to fall. Thus a point will come at which it no longer pays to produce them, *unless the rate of interest falls* *pari passu*. When there is *no* asset of which the marginal efficiency reaches the rate of interest, the further production of capital-assets will come to a standstill.

Let us suppose (as a mere hypothesis at this stage of the argument) that there is some asset (*e.g.* money) of which the rate of interest is fixed (or declines more slowly as output increases than does any other commodity's rate of interest); how is the position adjusted? Since  $a_1 + q_1$ ,  $a_2 - c_2$  and  $l_3$  are necessarily equal, and since  $l_3$  by hypothesis is either fixed or falling more slowly than  $q_1$  or  $-c_2$ , it follows that  $a_1$  and  $a_2$  must be rising. In other words, the present money-price of every commodity other than money tends to fall relatively to its expected future price. Hence, if  $q_1$  and  $-c_2$  continue to fall, a point comes at which it is not profitable to produce any of the commodities, unless the cost of production at some future date is expected to rise above the present cost by an amount which will cover the cost of carrying a stock produced now to the date of the prospective higher price.

It is now apparent that our previous statement to the effect that it is the money-rate of interest which sets a limit to the rate of output, is not strictly correct. We should have said that it is that asset's rate of interest which declines most slowly as the stock of assets in general increases, which eventually knocks out the profitable production of each of the others,—except in the contingency, just mentioned, of a special relationship between the present and prospective costs of production. As output increases, own-rates of interest decline to levels at which one asset after another falls below the standard of profitable production;—until, finally, one or more own-rates of interest remain at a level which is above that of the marginal efficiency of any asset whatever.

If by *money* we mean the standard of value, it is clear that it is not necessarily the money-rate of interest which makes the trouble. We could not get out of our difficulties (as some have supposed) merely by decreeing that wheat or houses shall be the standard of value instead of gold or sterling. For, it now appears that the same difficulties will ensue if there continues to exist *any* asset of which the own-rate of interest is reluctant to decline as output increases. It may be, for example, that gold will continue to fill this rôle in a country which has gone over to an inconvertible paper standard.

### III

In attributing, therefore, a peculiar significance to the money-rate of interest, we have been tacitly assuming that the kind of money to which we are accustomed has some special characteristics which lead to its own-rate of interest in terms of itself as standard being more reluctant to fall as output increases than the own-rates of interest of any other assets in terms of themselves. Is this assumption justified? Reflection shows, I think, that the following peculiarities, which commonly char-

acterise money as we know it, are capable of justifying it. To the extent that the established standard of value has these peculiarities, the summary statement, that it is the money-rate of interest which is the significant rate of interest, will hold good.

(i) The first characteristic which tends towards the above conclusion is the fact that money has, both in the long and in the short period, a zero, or at any rate a very small, elasticity of production, so far as the power of private enterprise is concerned, as distinct from the monetary authority;—elasticity of production<sup>1</sup> meaning, in this context, the response of the quantity of labour applied to producing it to a rise in the quantity of labour which a unit of it will command. Money, that is to say, cannot be readily produced;—labour cannot be turned on at will by entrepreneurs to produce money in increasing quantities as its price rises in terms of the wage-unit. In the case of an inconvertible managed currency this condition is strictly satisfied. But in the case of a gold-standard currency it is also approximately so, in the sense that the maximum proportional addition to the quantity of labour which can be thus employed is very small, except indeed in a country of which gold-mining is the major industry.

Now, in the case of assets having an elasticity of production, the reason why we assumed their own-rate of interest to decline was because we assumed the stock of them to increase as the result of a higher rate of output. In the case of money, however—postponing, for the moment, our consideration of the effects of reducing the wage-unit or of a deliberate increase in its supply by the monetary authority—the supply is fixed. Thus the characteristic that money cannot be readily produced by labour gives at once some *prima facie* presumption for the view that its own-rate of interest will be relatively reluctant to fall; whereas if money could be grown like a crop or manufactured

<sup>1</sup> See Chapter 20.

like a motor-car, depressions would be avoided or mitigated because, if the price of other assets was tending to fall in terms of money, more labour would be diverted into the production of money;—as we see to be the case in gold-mining countries, though for the world as a whole the maximum diversion in this way is almost negligible.

(ii) Obviously, however, the above condition is satisfied, not only by money, but by all pure rent-factors, the production of which is completely inelastic. A second condition, therefore, is required to distinguish money from other rent elements.

The second *differentia* of money is that it has an elasticity of substitution equal, or nearly equal, to zero; which means that as the exchange value of money rises there is no tendency to substitute some other factor for it;—except, perhaps, to some trifling extent, where the money-commodity is also used in manufacture or the arts. This follows from the peculiarity of money that its utility is solely derived from its exchange-value, so that the two rise and fall *pari passu*, with the result that as the exchange value of money rises there is no motive or tendency, as in the case of rent-factors, to substitute some other factor for it.

Thus, not only is it impossible to turn more labour on to producing money when its labour-price rises, but money is a bottomless sink for purchasing power, when the demand for it increases, since there is no value for it at which demand is diverted—as in the case of other rent-factors—so as to slop over into a demand for other things.

The only qualification to this arises when the rise in the value of money leads to uncertainty as to the future maintenance of this rise; in which event,  $a_1$  and  $a_2$  are increased, which is tantamount to an increase in the commodity-rates of money-interest and is, therefore, stimulating to the output of other assets.

(iii) Thirdly, we must consider whether these con-

clusions are upset by the fact that, even though the quantity of money cannot be increased by diverting labour into producing it, nevertheless an assumption that its effective supply is rigidly fixed would be inaccurate. In particular, a reduction of the wage-unit will release cash from its other uses for the satisfaction of the liquidity-motive; whilst, in addition to this, as money-values fall, the stock of money will bear a higher proportion to the total wealth of the community.

It is not possible to dispute on purely theoretical grounds that this reaction might be capable of allowing an adequate decline in the money-rate of interest. There are, however, several reasons, which taken in combination are of compelling force, why in an economy of the type to which we are accustomed it is very probable that the money-rate of interest will often prove reluctant to decline adequately:

(a) We have to allow, first of all, for the reactions of a fall in the wage-unit on the marginal efficiencies of other assets in terms of money;—for it is the *difference* between these and the money-rate of interest with which we are concerned. If the effect of the fall in the wage-unit is to produce an expectation that it will subsequently rise again, the result will be wholly favourable. If, on the contrary, the effect is to produce an expectation of a further fall, the reaction on the marginal efficiency of capital may offset the decline in the rate of interest.<sup>1</sup>

(b) The fact that wages tend to be sticky in terms of money, the money-wage being more stable than the real wage, tends to limit the readiness of the wage-unit to fall in terms of money. Moreover, if this were not so, the position might be worse rather than better; because, if money-wages were to fall easily, this might often tend to create an expectation of a further fall with unfavourable reactions on the marginal efficiency of capital.

<sup>1</sup> This is a matter which will be examined in greater detail in Chapter 19 below.

Furthermore, if wages were to be fixed in terms of some other commodity, *e.g.* wheat, it is improbable that they would continue to be sticky. It is because of money's other characteristics—those, especially, which make it *liquid*—that wages, when fixed in terms of it, tend to be sticky.<sup>1</sup>

(c) Thirdly, we come to what is the most fundamental consideration in this context, namely, the characteristics of money which satisfy liquidity-preference. For, in certain circumstances such as will often occur, these will cause the rate of interest to be insensitive, particularly below a certain figure,<sup>2</sup> even to a substantial increase in the quantity of money in proportion to other forms of wealth. In other words, beyond a certain point money's yield from liquidity does not fall in response to an increase in its quantity to anything approaching the extent to which the yield from other types of assets falls when their quantity is comparably increased.

In this connection the low (or negligible) carrying-costs of money play an essential part. For if its carrying-costs were material, they would offset the effect of expectations as to the prospective value of money at future dates. The readiness of the public to increase their stock of money in response to a comparatively small stimulus is due to the advantages of liquidity (real or supposed) having no offset to contend with in the shape of carrying-costs mounting steeply with the lapse of time. In the case of a commodity other than money a modest stock of it may offer some convenience to users of the commodity. But even though a larger stock might have some attractions as representing a store of wealth of stable value, this would be offset by its carrying-costs in the shape of storage, wastage, etc.

<sup>1</sup> If wages (and contracts) were fixed in terms of wheat, it might be that wheat would acquire some of money's liquidity-premium;—we will return to this question in (iv) below.

<sup>2</sup> See p. 172 above.



Hence, after a certain point is reached, there is necessarily a loss in holding a greater stock.

In the case of money, however, this, as we have seen, is not so,—and for a variety of reasons, namely, those which constitute money as being, in the estimation of the public, *par excellence* “liquid.” Thus those reformers, who look for a remedy by creating artificial carrying-costs for money through the device of requiring legal-tender currency to be periodically stamped at a prescribed cost in order to retain its quality as money, or in analogous ways, have been on the right track; and the practical value of their proposals deserves consideration.

The significance of the money-rate of interest arises, therefore, out of the combination of the characteristics that, through the working of the liquidity-motive, this rate of interest may be somewhat unresponsive to a change in the proportion which the quantity of money bears to other forms of wealth measured in money, and that money has (or may have) zero (or negligible) elasticities both of production and of substitution. The first condition means that demand may be predominantly directed to money, the second that when this occurs labour cannot be employed in producing more money, and the third that there is no mitigation at any point through some other factor being capable, if it is sufficiently cheap, of doing money’s duty equally well. The only relief—apart from changes in the marginal efficiency of capital—can come (so long as the propensity towards liquidity is unchanged) from an increase in the quantity of money, or—which is formally the same thing—a rise in the value of money which enables a given quantity to provide increased money-services.

Thus a rise in the money-rate of interest retards the output of all the objects of which the production is elastic without being capable of stimulating the output of money (the production of which is, by hypothesis,

perfectly inelastic). The money-rate of interest, by setting the pace for all the other commodity-rates of interest, holds back investment in the production of these other commodities without being capable of stimulating investment for the production of money, which by hypothesis cannot be produced. Moreover, owing to the elasticity of demand for liquid cash in terms of debts, a small change in the conditions governing this demand may not much alter the money-rate of interest, whilst (apart from official action) it is also impracticable, owing to the inelasticity of the production of money, for natural forces to bring the money-rate of interest down by affecting the supply side. In the case of an ordinary commodity, the inelasticity of the demand for liquid stocks of it would enable small changes on the demand side to bring its rate of interest up or down with a rush, whilst the elasticity of its supply would also tend to prevent a high premium on spot over forward delivery. Thus with other commodities left to themselves, “natural forces,” *i.e.* the ordinary forces of the market, would tend to bring their rate of interest down until the emergence of full employment had brought about for commodities generally the inelasticity of supply which we have postulated as a normal characteristic of money. Thus in the absence of money and in the absence—we must, of course, also suppose—of any other commodity with the assumed characteristics of money, the rates of interest would only reach equilibrium when there is full employment.

Unemployment develops, that is to say, because people want the moon;—men cannot be employed when the object of desire (*i.e.* money) is something which cannot be produced and the demand for which cannot be readily choked off. There is no remedy but to persuade the public that green cheese is practically the same thing and to have a green cheese factory (*i.e.* a central bank) under public control.

It is interesting to notice that the characteristic

which has been traditionally supposed to render gold especially suitable for use as the standard of value, namely, its inelasticity of supply, turns out to be precisely the characteristic which is at the bottom of the trouble.

Our conclusion can be stated in the most general form (taking the propensity to consume as given) as follows. No further increase in the rate of investment is possible when the greatest amongst the own-rates of own-interest of all available assets is equal to the greatest amongst the marginal efficiencies of all assets, measured in terms of the asset whose own-rate of own-interest is greatest.

In a position of full employment this condition is necessarily satisfied. But it may also be satisfied before full employment is reached, if there exists some asset, having zero (or relatively small) elasticities of production and substitution,<sup>1</sup> whose rate of interest declines more slowly, as output increases, than the marginal efficiencies of capital-assets measured in terms of it.

#### IV

We have shown above that for a commodity to be the standard of value is not a sufficient condition for that commodity's rate of interest to be the significant rate of interest. It is, however, interesting to consider how far those characteristics of money as we know it, which make the money-rate of interest the significant rate, are bound up with money being the standard in which debts and wages are usually fixed. The matter requires consideration under two aspects.

In the first place, the fact that contracts are fixed, and wages are usually somewhat stable, in terms of money unquestionably plays a large part in attracting to money so high a liquidity-premium. The conveni-

<sup>1</sup> A *zero* elasticity is a more stringent condition than is necessarily required.

ence of holding assets in the same standard as that in which future liabilities may fall due and in a standard in terms of which the future cost of living is expected to be relatively stable, is obvious. At the same time the expectation of relative stability in the future money-cost of output might not be entertained with much confidence if the standard of value were a commodity with a high elasticity of production. Moreover, the low carrying-costs of money as we know it play quite as large a part as a high liquidity-premium in making the money-rate of interest the significant rate. For what matters is the *difference* between the liquidity-premium and the carrying-costs; and in the case of most commodities, other than such assets as gold and silver and bank-notes, the carrying-costs are at least as high as the liquidity-premium ordinarily attaching to the standard in which contracts and wages are fixed, so that, even if the liquidity-premium now attaching to (*e.g.*) sterling-money were to be transferred to (*e.g.*) wheat, the wheat-rate of interest would still be unlikely to rise above zero. It remains the case, therefore, that, whilst the fact of contracts and wages being fixed in terms of money considerably enhances the significance of the money-rate of interest, this circumstance is, nevertheless, probably insufficient by itself to produce the observed characteristics of the money-rate of interest.

The second point to be considered is more subtle. The normal expectation that the value of output will be more stable in terms of money than in terms of any other commodity, depends of course, not on wages being arranged in terms of money, but on wages being relatively *sticky* in terms of money. What, then, would the position be if wages were expected to be more sticky (*i.e.* more stable) in terms of some one or more commodities other than money, than in terms of money itself? Such an expectation requires, not only that the costs of the commodity in question are expected to be relatively constant in terms of the wage-unit for

a greater or smaller scale of output both in the short and in the long period, but also that any surplus over the current demand at cost-price can be taken into stock without cost, *i.e.* that its liquidity-premium exceeds its carrying-costs (for, otherwise, since there is no hope of profit from a higher price, the carrying of a stock must necessarily involve a loss). If a commodity can be found to satisfy these conditions, then, assuredly, it might be set up as a rival to money. Thus it is not logically impossible that there should be a commodity in terms of which the value of output is expected to be more stable than in terms of money. But it does not seem probable that any such commodity exists.

I conclude, therefore, that the commodity, in terms of which wages are expected to be most sticky, cannot be one whose elasticity of production is not least, and for which the excess of carrying-costs over liquidity-premium is not least. In other words, the expectation of a relative stickiness of wages in terms of money is a corollary of the excess of liquidity-premium over carrying-costs being greater for money than for any other asset.

Thus we see that the various characteristics, which combine to make the money-rate of interest significant, interact with one another in a cumulative fashion. The fact that money has low elasticities of production and substitution and low carrying-costs tends to raise the expectation that money-wages will be relatively stable; and this expectation enhances money's liquidity-premium and prevents the exceptional correlation between the money-rate of interest and the marginal efficiencies of other assets which might, if it could exist, rob the money-rate of interest of its sting.

Professor Pigou (with others) has been accustomed to assume that there is a presumption in favour of real wages being more stable than money-wages. But this could only be the case if there were a presumption in

favour of stability of employment. Moreover, there is also the difficulty that wage-goods have a high carrying-cost. If, indeed, some attempt were made to stabilise real wages by fixing wages in terms of wage-goods, the effect could only be to cause a violent oscillation of money-prices. For every small fluctuation in the propensity to consume and the inducement to invest would cause money-prices to rush violently between zero and infinity. That money-wages should be more stable than real wages is a condition of the system possessing inherent stability.

Thus the attribution of relative stability to real wages is not merely a mistake in fact and experience. It is also a mistake in logic, if we are supposing that the system in view is stable, in the sense that small changes in the propensity to consume and the inducement to invest do not produce violent effects on prices.

▼

As a footnote to the above, it may be worth emphasising what has been already stated above, namely, that "liquidity" and "carrying-costs" are both a matter of degree; and that it is only in having the former high relatively to the latter that the peculiarity of "money" consists.

Consider, for example, an economy in which there is no asset for which the liquidity-premium is always in excess of the carrying-costs; which is the best definition I can give of a so-called "non-monetary" economy. There exists nothing, that is to say, but particular consumables and particular capital equipments more or less differentiated according to the character of the consumables which they can yield up, or assist to yield up, over a greater or a shorter period of time; all of which, unlike cash, deteriorate or involve expense, if they are kept in stock, to a value in excess of any liquidity-premium which may attach to them.

In such an economy capital equipments will differ from one another (*a*) in the variety of the consumables in the production of which they are capable of assisting, (*b*) in the stability of value of their output (in the sense in which the value of bread is more stable through time than the value of fashionable novelties), and (*c*) in the rapidity with which the wealth embodied in them can become "liquid", in the sense of producing output, the proceeds of which can be re-embodied if desired in quite a different form.

The owners of wealth will then weigh the lack of "liquidity" of different capital equipments in the above sense as a medium in which to hold wealth against the best available actuarial estimate of their prospective yields after allowing for risk. The liquidity-premium, it will be observed, is partly similar to the risk-premium, but partly different;—the difference corresponding to the difference between the best estimates we can make of probabilities and the confidence with which we make them.<sup>1</sup> When we were dealing, in earlier chapters, with the estimation of prospective yield, we did not enter into detail as to how the estimation is made: and to avoid complicating the argument, we did not distinguish differences in liquidity from differences in risk proper. It is evident, however, that in calculating the own-rate of interest we must allow for both.

There is, clearly, no absolute standard of "liquidity" but merely a scale of liquidity—a varying premium of which account has to be taken, in addition to the yield of use and the carrying-costs, in estimating the comparative attractions of holding different forms of wealth. The conception of what contributes to "liquidity" is a partly vague one, changing from time to time and depending on social practices and institutions. The order of preference in the minds of owners of wealth in which at any given time they express their feelings about liquidity is, however, definite and is all we require

<sup>1</sup> Cf. the footnote to p. 148 above.

for our analysis of the behaviour of the economic system.

It may be that in certain historic environments the possession of land has been characterised by a high liquidity-premium in the minds of owners of wealth; and since land resembles money in that its elasticities of production and substitution may be very low,<sup>1</sup> it is conceivable that there have been occasions in history in which the desire to hold land has played the same rôle in keeping up the rate of interest at too high a level which money has played in recent times. It is difficult to trace this influence quantitatively owing to the absence of a forward price for land in terms of itself which is strictly comparable with the rate of interest on a money debt. We have, however, something which has, at times, been closely analogous, in the shape of high rates of interest on mortgages.<sup>2</sup> The high rates of interest from mortgages on land, often exceeding the probable net yield from cultivating the land, have been a familiar feature of many agricultural economies. Usury laws have been directed primarily against encumbrances of this character. And rightly so. For in earlier social organisations where long-term bonds in the modern sense were non-existent, the competition of a high interest-rate on mortgages may well have had the same effect in retarding the growth of wealth from current investment in newly produced capital-assets, as high interest rates on long-term debts have had in more recent times.

<sup>1</sup> The attribute of "liquidity" is by no means independent of the presence of these two characteristics. For it is unlikely that an asset, of which the supply can be easily increased or the desire for which can be easily diverted by a change in relative price, will possess the attribute of "liquidity" in the minds of owners of wealth. Money itself rapidly loses the attribute of "liquidity" if its future supply is expected to undergo sharp changes.

<sup>2</sup> A mortgage and the interest thereon are, indeed, fixed in terms of money. But the fact that the mortgagor has the option to deliver the land itself in discharge of the debt—and must so deliver it if he cannot find the money on demand—has sometimes made the mortgage system approximate to a contract of land for future delivery against land for spot delivery. There have been sales of lands to tenants against mortgages effected by them, which, in fact, came very near to being transactions of this character.

That the world after several millennia of steady individual saving, is so poor as it is in accumulated capital-assets, is to be explained, in my opinion, neither by the improvident propensities of mankind, nor even by the destruction of war, but by the high liquidity-premiums formerly attaching to the ownership of land and now attaching to money. I differ in this from the older view as expressed by Marshall with an unusual dogmatic force in his *Principles of Economics*, p. 581:—

Everyone is aware that the accumulation of wealth is held in check, and the rate of interest so far sustained, by the preference which the great mass of humanity have for present over deferred gratifications, or, in other words, by their unwillingness to "wait".

## VI

In my *Treatise on Money* I defined what purported to be a unique rate of interest, which I called the *natural rate* of interest—namely, the rate of interest which, in the terminology of my *Treatise*, preserved equality between the rate of saving (as there defined) and the rate of investment. I believed this to be a development and clarification of Wicksell's "natural rate of interest", which was, according to him, the rate which would preserve the stability of some, not quite clearly specified, price-level.

I had, however, overlooked the fact that in any given society there is, on this definition, a *different* natural rate of interest for each hypothetical level of employment. And, similarly, for every rate of interest there is a level of employment for which that rate is the "natural" rate, in the sense that the system will be in equilibrium with that rate of interest and that level of employment. Thus it was a mistake to speak of *the* natural rate of interest or to suggest that the above definition would yield a unique value for the rate of interest irrespective of the level of employment. I had

not then understood that, in certain conditions, the system could be in equilibrium with less than full employment.

I am now no longer of the opinion that the concept of a "natural" rate of interest, which previously seemed to me a most promising idea, has anything very useful or significant to contribute to our analysis. It is merely the rate of interest which will preserve the *status quo*; and, in general, we have no predominant interest in the *status quo* as such.

If there is any such rate of interest, which is unique and significant, it must be the rate which we might term the *neutral* rate of interest,<sup>1</sup> namely, the natural rate in the above sense which is consistent with *full employment*, given the other parameters of the system; though this rate might be better described, perhaps, as the *optimum* rate.

The neutral rate of interest can be more strictly defined as the rate of interest which prevails in equilibrium when output and employment are such that the elasticity of employment as a whole is zero.<sup>2</sup>

The above gives us, once again, the answer to the question as to what tacit assumption is required to make sense of the classical theory of the rate of interest. This theory assumes either that the actual rate of interest is always equal to the neutral rate of interest in the sense in which we have just defined the latter, or alternatively that the actual rate of interest is always equal to the rate of interest which will maintain employment at some specified constant level. If the traditional theory is thus interpreted, there is little or nothing in its practical conclusions to which we need take exception. The classical theory assumes that the banking authority or natural forces cause the market-rate of interest to

<sup>1</sup> This definition does not correspond to any of the various definitions of *neutral money* given by recent writers; though it may, perhaps, have some relation to the objective which these writers have had in mind.

<sup>2</sup> Cf. Chapter 20 below.

satisfy one or other of the above conditions; and it investigates what laws will govern the application and rewards of the community's productive resources subject to this assumption. With this limitation in force, the volume of output depends solely on the assumed constant level of employment in conjunction with the current equipment and technique; and we are safely ensconced in a Ricardian world.

## CHAPTER 18

## THE GENERAL THEORY OF EMPLOYMENT RE-STATED

## I

WE have now reached a point where we can gather together the threads of our argument. To begin with, it may be useful to make clear which elements in the economic system we usually take as given, which are the independent variables of our system and which are the dependent variables.

We take as given the existing skill and quantity of available labour, the existing quality and quantity of available equipment, the existing technique, the degree of competition, the tastes and habits of the consumer, the disutility of different intensities of labour and of the activities of supervision and organisation, as well as the social structure including the forces, other than our variables set forth below, which determine the distribution of the national income. This does not mean that we assume these factors to be constant; but merely that, in this place and context, we are not considering or taking into account the effects and consequences of changes in them.

Our independent variables are, in the first instance, the propensity to consume, the schedule of the marginal efficiency of capital and the rate of interest, though, as we have already seen, these are capable of further analysis.

Our dependent variables are the volume of employment and the national income (or national dividend) measured in wage-units.

The factors, which we have taken as given, influence

our independent variables, but do not completely determine them. For example, the schedule of the marginal efficiency of capital depends partly on the existing quantity of equipment which is one of the given factors, but partly on the state of long-term expectation which cannot be inferred from the given factors. But there are certain other elements which the given factors determine so completely that we can treat these derivatives as being themselves given. For example, the given factors allow us to infer what level of national income measured in terms of the wage-unit will correspond to any given level of employment; so that, within the economic framework which we take as given, the national income depends on the volume of employment, *i.e.* on the quantity of effort currently devoted to production, in the sense that there is a unique correlation between the two.<sup>1</sup> Furthermore, they allow us to infer the shape of the aggregate supply functions, which embody the *physical* conditions of supply, for different types of products;—that is to say, the quantity of employment which will be devoted to production corresponding to any given level of effective demand measured in terms of wage-units. Finally, they furnish us with the supply function of labour (or effort); so that they tell us *inter alia* at what point the employment function<sup>2</sup> for labour as a whole will cease to be elastic.

The schedule of the marginal efficiency of capital depends, however, partly on the given factors and partly on the prospective yield of capital-assets of different kinds; whilst the rate of interest depends partly on the state of liquidity-preference (*i.e.* on the liquidity function) and partly on the quantity of money measured in terms of wage-units. Thus we can sometimes regard our ultimate independent variables as consisting of (I) the three fundamental psychological

<sup>1</sup> We are ignoring at this stage certain complications which arise when the employment functions of different products have different curvatures within the relevant range of employment. See Chapter 20 below.

<sup>2</sup> Defined in Chapter 20 below.

factors, namely, the psychological propensity to consume, the psychological attitude to liquidity and the psychological expectation of future yield from capital-assets, (2) the wage-unit as determined by the bargains reached between employers and employed, and (3) the quantity of money as determined by the action of the central bank; so that, if we take as given the factors specified above, these variables determine the national income (or dividend) and the quantity of employment. But these again would be capable of being subjected to further analysis, and are not, so to speak, our ultimate atomic independent elements.

The division of the determinants of the economic system into the two groups of given factors and independent variables is, of course, quite arbitrary from any absolute standpoint. The division must be made entirely on the basis of experience, so as to correspond on the one hand to the factors in which the changes seem to be so slow or so little relevant as to have only a small and comparatively negligible short-term influence on our *quaesitum*; and on the other hand to those factors in which the changes are found in practice to exercise a dominant influence on our *quaesitum*. Our present object is to discover what determines at any time the national income of a given economic system and (which is almost the same thing) the amount of its employment; which means in a study so complex as economics, in which we cannot hope to make completely accurate generalisations, the factors whose changes *mainly* determine our *quaesitum*. Our final task might be to select those variables which can be deliberately controlled or managed by central authority in the kind of system in which we actually live.

## II

Let us now attempt to summarise the argument of the previous chapters; taking the factors in the reverse order to that in which we have introduced them.

There will be an inducement to push the rate of new investment to the point which forces the supply-price of each type of capital-asset to a figure which, taken in conjunction with its prospective yield, brings the marginal efficiency of capital in general to approximate equality with the rate of interest. That is to say, the physical conditions of supply in the capital-goods industries, the state of confidence concerning the prospective yield, the psychological attitude to liquidity and the quantity of money (preferably calculated in terms of wage-units) determine, between them, the rate of new investment.

But an increase (or decrease) in the rate of investment will have to carry with it an increase (or decrease) in the rate of consumption; because the behaviour of the public is, in general, of such a character that they are only willing to widen (or narrow) the gap between their income and their consumption if their income is being increased (or diminished). That is to say, changes in the rate of consumption are, in general, *in the same direction* (though smaller in amount) as changes in the rate of income. The relation between the increment of consumption which has to accompany a given increment of saving is given by the marginal propensity to consume. The ratio, thus determined, between an increment of investment and the corresponding increment of aggregate income, both measured in wage-units, is given by the investment multiplier.

Finally, if we assume (as a first approximation) that the employment multiplier is equal to the investment multiplier, we can, by applying the multiplier to the increment (or decrement) in the rate of investment brought about by the factors first described, infer the increment of employment.

An increment (or decrement) of employment is liable, however, to raise (or lower) the schedule of liquidity-preference; there being three ways in which it will tend to increase the demand for money, inasmuch

the value of output will rise when employment increases even if the wage-unit and prices (in terms of the wage-unit) are unchanged, but, in addition, the wage-unit itself will tend to rise as employment improves, and the increase in output will be accompanied by a rise of prices (in terms of the wage-unit) owing to increasing cost in the short period.

Thus the position of equilibrium will be influenced by these repercussions; and there are other repercussions also. Moreover, there is not one of the above factors which is not liable to change without much warning, and sometimes substantially. Hence the extreme complexity of the actual course of events. Nevertheless, these seem to be the factors which it is useful and convenient to isolate. If we examine any actual problem along the lines of the above schematism, we shall find it more manageable; and our practical intuition (which can take account of a more detailed complex of facts than can be treated on general principles) will be offered a less intractable material upon which to work.

### III

The above is a summary of the General Theory. But the actual phenomena of the economic system are also coloured by certain special characteristics of the propensity to consume, the schedule of the marginal efficiency of capital and the rate of interest, about which we can safely generalise from experience, but which are not logically necessary.

In particular, it is an outstanding characteristic of the economic system in which we live that, whilst it is subject to severe fluctuations in respect of output and employment, it is not violently unstable. Indeed it seems capable of remaining in a chronic condition of sub-normal activity for a considerable period without any marked tendency either towards recovery or towards complete collapse. Moreover, the evidence indicates



that full, or even approximately full, employment is of rare and short-lived occurrence. Fluctuations may start briskly but seem to wear themselves out before they have proceeded to great extremes, and an intermediate situation which is neither desperate nor satisfactory is our normal lot. It is upon the fact that fluctuations tend to wear themselves out before proceeding to extremes and eventually to reverse themselves, that the theory of business *cycles* having a regular phase has been founded. The same thing is true of prices, which, in response to an initiating cause of disturbance, seem to be able to find a level at which they can remain, for the time being, moderately stable.

Now, since these facts of experience do not follow of logical necessity, one must suppose that the environment and the psychological propensities of the modern world must be of such a character as to produce these results. It is, therefore, useful to consider what hypothetical psychological propensities would lead to a stable system; and, then, whether these propensities can be plausibly ascribed, on our general knowledge of contemporary human nature, to the world in which we live.

The conditions of stability which the foregoing analysis suggests to us as capable of explaining the observed results are the following:

(i) The marginal propensity to consume is such that, when the output of a given community increases (or decreases) because more (or less) employment is being applied to its capital equipment, the multiplier relating the two is greater than unity but not very large.

(ii) When there is a change in the prospective yield of capital or in the rate of interest, the schedule of the marginal efficiency of capital will be such that the change in new investment will not be in great disproportion to the change in the former; *i.e.* moderate changes in the prospective yield of capital or in the rate of interest will not be associated with very great changes in the rate of investment.

(iii) When there is a change in employment, money-wages tend to change in the same direction as, but not in great disproportion to, the change in employment; *i.e.* moderate changes in employment are not associated with very great changes in money-wages. This is a condition of the stability of prices rather than of employment.

(iv) We may add a fourth condition, which provides not so much for the stability of the system as for the tendency of a fluctuation in one direction to reverse itself in due course; namely, that a rate of investment, higher (or lower) than prevailed formerly, begins to react unfavourably (or favourably) on the marginal efficiency of capital if it is continued for a period which, measured in years, is not very large.

(i) Our first condition of stability, namely, that the multiplier, whilst greater than unity, is not very great, is highly plausible as a psychological characteristic of human nature. As real income increases, both the pressure of present needs diminishes and the margin over the established standard of life is increased; and as real income diminishes the opposite is true. Thus it is natural—at any rate on the average of the community—that current consumption should be expanded when employment increases, but by less than the full increment of real income; and that it should be diminished when employment diminishes, but by less than the full decrement of real income. Moreover, what is true of the average of individuals is likely to be also true of governments, especially in an age when a progressive increase of unemployment will usually force the State to provide relief out of borrowed funds.

But whether or not this psychological law strikes the reader as plausible *a priori*, it is certain that experience would be extremely different from what it is if the law did not hold. For in that case an increase of investment, however small, would set moving a cumulative increase of effective demand until a position of full

employment had been reached; while a decrease of investment would set moving a cumulative decrease of effective demand until no one at all was employed. Yet experience shows that we are generally in an intermediate position. It is not impossible that there may be a range within which instability does in fact prevail. But, if so, it is probably a narrow one, outside of which in either direction our psychological law must unquestionably hold good. Furthermore, it is also evident that the multiplier, though exceeding unity, is not, in normal circumstances, enormously large. For, if it were, a given change in the rate of investment would involve a great change (limited only by full or zero employment) in the rate of consumption.

(ii) Whilst our first condition provides that a moderate change in the rate of investment will not involve an indefinitely great change in the demand for consumption-goods our second condition provides that a moderate change in the prospective yield of capital-assets or in the rate of interest will not involve an indefinitely great change in the rate of investment. This is likely to be the case owing to the increasing cost of producing a greatly enlarged output from the existing equipment. If, indeed, we start from a position where there are very large surplus resources for the production of capital-assets, there may be considerable instability within a certain range; but this will cease to hold good as soon as the surplus is being largely utilised. Moreover, this condition sets a limit to the instability resulting from rapid changes in the prospective yield of capital-assets due to sharp fluctuations in business psychology or to epoch-making inventions—though more, perhaps, in the upward than in the downward direction.

(iii) Our third condition accords with our experience of human nature. For although the struggle for money-wages is, as we have pointed out above, essentially a struggle to maintain a high *relative* wage,

his struggle is likely, as employment increases, to be intensified in each individual case both because the bargaining position of the worker is improved and because the diminished marginal utility of his wage and his improved financial margin make him readier to run risks. Yet, all the same, these motives will operate within limits, and workers will not seek a much greater money-wage when employment improves or allow a very great reduction rather than suffer any unemployment at all.

But here again, whether or not this conclusion is plausible *a priori*, experience shows that some such psychological law must actually hold. For if competition between unemployed workers always led to a very great reduction of the money-wage, there would be a violent instability in the price-level. Moreover, there might be no position of stable equilibrium except in conditions consistent with full employment; since the wage-unit might have to fall without limit until it reached a point where the effect of the abundance of money in terms of the wage-unit on the rate of interest was sufficient to restore a level of full employment. At no other point could there be a resting-place.<sup>1</sup>

(iv) Our fourth condition, which is a condition not so much of stability as of alternate recession and recovery, is merely based on the presumption that capital-assets are of various ages, wear out with time and are not all very long-lived; so that if the rate of investment falls below a certain minimum level, it is merely a question of time (failing large fluctuations in other factors) before the marginal efficiency of capital rises sufficiently to bring about a recovery of investment above this minimum. And similarly, of course, if investment rises to a higher figure than formerly, it is only a question of time before the marginal efficiency of capital falls sufficiently to bring about

<sup>1</sup> The effects of changes in the wage-unit will be considered in detail in Chapter 19.

a recession unless there are compensating changes in other factors.

For this reason, even those degrees of recovery and recession, which can occur within the limitations set by our other conditions of stability, will be likely, if they persist for a sufficient length of time and are not interfered with by changes in the other factors, to cause a reverse movement in the opposite direction, until the same forces as before again reverse the direction.

Thus our four conditions together are adequate to explain the outstanding features of our actual experience;—namely, that we oscillate, avoiding the gravest extremes of fluctuation in employment and in prices in both directions, round an intermediate position appreciably below full employment and appreciably above the minimum employment a decline below which would endanger life.

But we must not conclude that the mean position thus determined by “natural” tendencies, namely, by those tendencies which are likely to persist, failing measures expressly designed to correct them, is, therefore, established by laws of necessity. The unimpeded rule of the above conditions is a fact of observation concerning the world as it is or has been, and not a necessary principle which cannot be changed.

## BOOK V

### MONEY-WAGES AND PRICES