

## Chapter 13

# THE GENERAL THEORY OF THE RATE OF INTEREST

### I

We have shown in chapter 11 that, whilst there are forces causing the rate of investment to rise or fall so as to keep the marginal efficiency of capital equal to the rate of interest, yet the marginal efficiency of capital is, in itself, a different thing from the ruling rate of interest. The schedule of the marginal efficiency of capital may be said to govern the terms on which loanable funds are demanded for the purpose of new investment; whilst the rate of interest governs the terms on which funds are being currently supplied. To complete our theory, therefore, we need to know what determines the rate of interest.

In chapter 14 and its Appendix we shall consider the answers to this question which have been given hitherto. Broadly speaking, we shall find that they make the rate of interest to depend on the interaction of the schedule of the marginal efficiency of capital with the psychological propensity to save. But the notion that the rate of interest is the balancing factor which brings the demand for saving in the shape of new investment forthcoming at a given rate of interest into equality with the supply of saving which results at that rate of interest from the community's psychological propensity to save, breaks down as soon as we perceive that it is impossible to deduce the rate of interest merely from a knowledge of these two factors.

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What, then, is our own answer to this question?

### II

The psychological time-preferences of an individual require two distinct sets of decisions to carry them out completely. The first is concerned with that aspect of time-preference which I have called the *propensity to consume*, which, operating under the influence of the various motives set forth in Book III, determines for each individual how much of his income he will consume and how much he will reserve in *some* form of command over future consumption.

But this decision having been made, there is a further decision which awaits him, namely, in *what form* he will hold the command over future consumption which he has reserved, whether out of his current income or from previous savings. Does he want to hold it in the form of immediate, liquid command (i.e. in money or its equivalent)? Or is he prepared to part with immediate command for a specified or indefinite period, leaving it to future market conditions to determine on what terms he can, if necessary, convert deferred command over specific goods into immediate command over goods in general? In other words, what is the degree of his *liquidity-preference*—where an individual's liquidity-preference is given by a schedule of the amounts of his resources, valued in terms of money or of wage-units, which he will wish to retain in the form of money in different sets of circumstances?

We shall find that the mistake in the accepted theories of the rate of interest lies in their attempting to derive the rate of interest from the first of these two constituents of psychological time-preference to the neglect of the second; and it is this neglect which we must endeavour to repair.

It should be obvious that the rate of interest cannot

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be a return to saving or waiting as such. For if a man hoards his savings in cash, he earns no interest, though he saves just as much as before. On the contrary, the mere definition of the rate of interest tells us in so many words that the rate of interest is the reward for parting with liquidity for a specified period. For the rate of interest is, in itself, nothing more than the inverse proportion between a sum of money and what can be obtained for parting with control over the money in exchange for a debt<sup>1</sup> for a stated period of time.<sup>2</sup>

Thus the rate of interest at any time, being the reward for parting with liquidity, is a measure of the unwillingness of those who possess money to part with their liquid control over it. The rate of interest is not the 'price' which brings into equilibrium the demand for resources to invest with the readiness to abstain from present consumption. It is the 'price' which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash;—which implies that if the rate of interest were lower, i.e. if the reward for parting with cash were diminished, the aggregate amount of cash which the public would wish to hold would exceed the available supply, and that if the rate of interest were raised, there would be a surplus of cash which no one would be willing to hold. If this explanation is correct, the quantity of money is the

<sup>1</sup> Without disturbance to this definition, we can draw the line between 'money' and 'debts' at whatever point is most convenient for handling a particular problem. For example, we can treat as *money* any command over general purchasing power which the owner has not parted with for a period in excess of three months, and as *debt* what cannot be recovered for a longer period than this; or we can substitute for 'three months' one month or three days or three hours or any other period; or we can exclude from *money* whatever is not legal tender on the spot. It is often convenient in practice to include in *money* time-deposits with banks and, occasionally, even such instruments as (e.g.) treasury bills. As a rule, I shall, as in my *Treatise on Money*, assume that *money* is co-extensive with bank deposits.

<sup>2</sup> In general discussion, as distinct from specific problems where the period of the debt is expressly specified, it is convenient to mean by the rate of interest the complex of the various rates of interest current for different periods of time, i.e. for debts of different maturities.

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other factor, which, in conjunction with liquidity-preference, determines the actual rate of interest in given circumstances. Liquidity-preference is a potentiality or functional tendency, which fixes the quantity of money which the public will hold when the rate of interest is given; so that if  $r$  is the rate of interest,  $M$  the quantity of money and  $L$  the function of liquidity-preference, we have  $M = L(r)$ . This is where, and how, the quantity of money enters into the economic scheme.

At this point, however, let us turn back and consider why such a thing as liquidity-preference exists. In this connection we can usefully employ the ancient distinction between the use of money for the transaction of current business and its use as a store of wealth. As regards the first of these two uses, it is obvious that up to a point it is worth while to sacrifice a certain amount of interest for the convenience of liquidity. But, given that the rate of interest is never negative, why should anyone prefer to hold his wealth in a form which yields little or no interest to holding it in a form which yields interest (assuming, of course, at this stage, that the risk of default is the same in respect of a bank balance as of a bond)? A full explanation is complex and must wait for chapter 15. There is, however, a necessary condition failing which the existence of a liquidity-preference for money as a means of holding wealth could not exist.

This necessary condition is the existence of *uncertainty* as to the future of the rate of interest, i.e. as to the complex of rates of interest for varying maturities which will rule at future dates. For if the rates of interest ruling at all future times could be foreseen with certainty, all future rates of interest could be inferred from the *present* rates of interest for debts of different maturities, which would be adjusted to the knowledge of the future rates. For example, if  $d_r$  is the value in the present year 1 of £1 deferred  $r$  years and it is

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known that  ${}_n d_r$  will be the value in the year  $n$  of £1 deferred  $r$  years from that date, we have

$${}_n d_r = \frac{1}{1} \frac{d_{n+r}}{d_n};$$

whence it follows that the rate at which any debt can be turned into cash  $n$  years hence is given by two out of the complex of current rates of interest. If the current rate of interest is positive for debts of every maturity, it must always be more advantageous to purchase a debt than to hold cash as a store of wealth.

If, on the contrary, the future rate of interest is uncertain we cannot safely infer that  ${}_n d_r$  will prove to be equal to  $\frac{1}{1} \frac{d_{n+r}}{d_n}$  when the time comes. Thus if a need for liquid cash may conceivably arise before the expiry of  $n$  years, there is a risk of a loss being incurred in purchasing a long-term debt and subsequently turning it into cash, as compared with holding cash. The actuarial profit or mathematical expectation of gain calculated in accordance with the existing probabilities—if it can be so calculated, which is doubtful—must be sufficient to compensate for the risk of disappointment.

There is, moreover, a further ground for liquidity-preference which results from the existence of uncertainty as to the future of the rate of interest, provided that there is an organised market for dealing in debts. For different people will estimate the prospects differently and anyone who differs from the predominant opinion as expressed in market quotations may have a good reason for keeping liquid resources in order to profit, if he is right, from its turning out in due course that the  ${}_1 d_r$ 's were in a mistaken relationship to one another.<sup>1</sup>

This is closely analogous to what we have already

<sup>1</sup> This is the same point as I discussed in my *Treatise on Money* under the designation of the two views and the ‘bull-bear’ position.

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discussed at some length in connection with the marginal efficiency of capital. Just as we found that the marginal efficiency of capital is fixed, not by the 'best' opinion, but by the market valuation as determined by mass psychology, so also expectations as to the future of the rate of interest as fixed by mass psychology have their reactions on liquidity-preference;—but with this addition that the individual, who believes that future rates of interest will be above the rates assumed by the market, has a reason for keeping actual liquid cash,<sup>1</sup> whilst the individual who differs from the market in the other direction will have a motive for borrowing money for short periods in order to purchase debts of longer term. The market price will be fixed at the point at which the sales of the 'bears' and the purchases of the 'bulls' are balanced.

The three divisions of liquidity-preference which we have distinguished above may be defined as depending on (i) the transactions-motive, i.e. the need of cash for the current transaction of personal and business exchanges; (ii) the precautionary-motive, i.e. the desire for security as to the future cash equivalent of a certain proportion of total resources; and (iii) the speculative-motive, i.e. the object of securing profit from knowing better than the market what the future will bring forth. As when we were discussing the marginal efficiency of capital, the question of the desirability of having a highly organised market for dealing with debts presents us with a dilemma. For, in the absence of an organised market, liquidity-preference due to the precautionary-motive would be greatly increased; whereas the existence of an organised market gives an

<sup>1</sup> It might be thought that, in the same way, an individual, who believed that the prospective yield of investments will be below what the market is expecting, will have a sufficient reason for holding liquid cash. But this is not the case. He has a sufficient reason for holding cash or debts in preference to equities; but the purchase of debts will be a preferable alternative to holding cash, unless he also believes that the future rate of interest will prove to be higher than the market is supposing.

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opportunity for wide fluctuations in liquidity-preference due to the speculative-motive.

It may illustrate the argument to point out that, if the liquidity-preferences due to the transactions-motive and the precautionary-motive are assumed to absorb a quantity of cash which is not very sensitive to changes in the rate of interest as such and apart from its reactions on the level of income, so that the total quantity of money, less this quantity, is available for satisfying liquidity-preferences due to the speculative-motive, the rate of interest and the price of bonds have to be fixed at the level at which the desire on the part of certain individuals to hold cash (because at that level they feel 'bearish' of the future of bonds) is exactly equal to the amount of cash available for the speculative-motive. Thus each increase in the quantity of money must raise the price of bonds sufficiently to exceed the expectations of some 'bull' and so influence him to sell his bond for cash and join the 'bear' brigade. If, however, there is a negligible demand for cash from the speculative-motive except for a short transitional interval, an increase in the quantity of money will have to lower the rate of interest almost forthwith, in whatever degree is necessary to raise employment and the wage-unit sufficiently to cause the additional cash to be absorbed by the transactions-motive and the precautionary-motive.

As a rule, we can suppose that the schedule of liquidity-preference relating the quantity of money to the rate of interest is given by a smooth curve which shows the rate of interest falling as the quantity of money is increased. For there are several different causes all leading towards this result.

In the first place, as the rate of interest falls, it is likely, *cet. par.*, that more money will be absorbed by liquidity-preferences due to the transactions-motive. For if the fall in the rate of interest increases the national income, the amount of money which it is convenient to

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keep for transactions will be increased more or less proportionately to the increase in income; whilst, at the same time, the cost of the convenience of plenty of ready cash in terms of loss of interest will be diminished. Unless we measure liquidity-preference in terms of wage-units rather than of money (which is convenient in some contexts), similar results follow if the increased employment ensuing on a fall in the rate of interest leads to an increase of wages, i.e. to an increase in the money value of the wage-unit. In the second place, every fall in the rate of interest may, as we have just seen, increase the quantity of cash which certain individuals will wish to hold because their views as to the future of the rate of interest differ from the market views.

Nevertheless, circumstances can develop in which even a large increase in the quantity of money may exert a comparatively small influence on the rate of interest. For a large increase in the quantity of money may cause so much uncertainty about the future that liquidity-preferences due to the precautionary-motive may be strengthened; whilst opinion about the future of the rate of interest may be so unanimous that a small change in present rates may cause a mass movement into cash. It is interesting that the stability of the system and its sensitiveness to changes in the quantity of money should be so dependent on the existence of a *variety* of opinion about what is uncertain. Best of all that we should know the future. But if not, then, if we are to control the activity of the economic system by changing the quantity of money, it is important that opinions should differ. Thus this method of control is more precarious in the United States, where everyone tends to hold the same opinion at the same time, than in England where differences of opinion are more usual.

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### III

We have now introduced money into our causal nexus for the first time, and we are able to catch a first glimpse of the way in which changes in the quantity of money work their way into the economic system. If, however, we are tempted to assert that money is the drink which stimulates the system to activity, we must remind ourselves that there may be several slips between the cup and the lip. For whilst an increase in the quantity of money may be expected, *cet. par.*, to reduce the rate of interest, this will not happen if the liquidity-preferences of the public are increasing more than the quantity of money; and whilst a decline in the rate of interest may be expected, *cet. par.*, to increase the volume of investment, this will not happen if the schedule of the marginal efficiency of capital is falling more rapidly than the rate of interest; and whilst an increase in the volume of investment may be expected, *cet. par.*, to increase employment, this may not happen if the propensity to consume is falling off. Finally, if employment increases, prices will rise in a degree partly governed by the shapes of the physical supply functions, and partly by the liability of the wage-unit to rise in terms of money. And when output has increased and prices have risen, the effect of this on liquidity-preference will be to increase the quantity of money necessary to maintain a given rate of interest.

### IV

Whilst liquidity-preference due to the speculative-motive corresponds to what in my *Treatise on Money* I called 'the state of bearishness', it is by no means the same thing. For 'bearishness' is there defined as the functional relationship, not between the rate of interest (or price of debts) and the quantity of money, but between the price of assets and debts, taken together,

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and the quantity of money. This treatment, however, involved a confusion between results due to a change in the rate of interest and those due to a change in the schedule of the marginal efficiency of capital, which I hope I have here avoided.

### V

The concept of *hoarding* may be regarded as a first approximation to the concept of *liquidity-preference*. Indeed if we were to substitute 'propensity to hoard' for 'hoarding', it would come to substantially the same thing. But if we mean by 'hoarding' an actual increase in cash-holding, it is an incomplete idea—and seriously misleading if it causes us to think of 'hoarding' and 'not-hoarding' as simple alternatives. For the decision to hoard is not taken absolutely or without regard to the advantages offered for parting with liquidity;—it results from a balancing of advantages, and we have, therefore, to know what lies in the other scale. Moreover it is impossible for the actual amount of hoarding to change as a result of decisions on the part of the public, so long as we mean by 'hoarding' the actual holding of cash. For the amount of hoarding must be equal to the quantity of money (or—on some definitions—to the quantity of money *minus* what is required to satisfy the transactions-motive); and the quantity of money is not determined by the public. All that the propensity of the public towards hoarding can achieve is to determine the rate of interest at which the aggregate desire to hoard becomes equal to the available cash. The habit of overlooking the relation of the rate of interest to hoarding may be a part of the explanation why interest has been usually regarded as the reward of not-spending, whereas in fact it is the reward of not-hoarding.