Chapter 15

THE PSYCHOLOGICAL AND BUSINESS INCENTIVES TO LIQUIDITY

I

We must now develop in more detail the analysis of the motives to liquidity-preference which were introduced in a preliminary way in chapter 13. The subject is substantially the same as that which has been sometimes discussed under the heading of the demand for money. It is also closely connected with what is called the income-velocity of money;—for the income-velocity of money merely measures what proportion of their incomes the public chooses to hold in cash, so that an increased income-velocity of money may be a symptom of a decreased liquidity-preference. It is not the same thing, however, since it is in respect of his stock of accumulated savings, rather than of his income, that the individual can exercise his choice between liquidity and illiquidity. And, anyhow, the term 'income-velocity of money' carries with it the misleading suggestion of a presumption in favour of the demand for money as a whole being proportional, or having some determinate relation, to income, whereas this presumption should apply, as we shall see, only to a *portion* of the public's cash holdings; with the result that it overlooks the part played by the rate of interest.

In my *Treatise on Money* I studied the total demand for money under the headings of income-deposits,

business-deposits, and savings-deposits, and I need not repeat here the analysis which I gave in chapter 3 of that book. Money held for each of the three purposes forms, nevertheless, a single pool, which the holder is under no necessity to segregate into three water-tight compartments; for they need not be sharply divided even in his own mind, and the same sum can be held primarily for one purpose and secondarily for another. Thus we can—equally well, and, perhaps, better—consider the individual's aggregate demand for money in given circumstances as a single decision, though the composite result of a number of different motives.

In analysing the motives, however, it is still convenient to classify them under certain headings, the first of which broadly corresponds to the former classification of income-deposits and business-deposits, and the two latter to that of savings-deposits. These I have briefly introduced in chapter 13 under the headings of the transactions-motive, which can be further classified as the income-motive and the business-motive, the precautionary-motive and the speculative-motive.

(i) *The Income-motive.* One reason for holding cash is to bridge the interval between the receipt of income and its disbursement. The strength of this motive in inducing a decision to hold a given aggregate of cash will chiefly depend on the amount of income and the normal length of the interval between its receipt and its disbursement. It is in this connection that the concept of the income-velocity of money is strictly appropriate.

(ii) *The Business-motive.* Similarly, cash is held to bridge the interval between the time of incurring business costs and that of the receipt of the sale-proceeds; cash held by dealers to bridge the interval between purchase and realisation being included under this heading. The strength of this demand will chiefly depend on the value of current output (and hence on

current income), and on the number of hands through which output passes.

(iii) *The Precautionary-motive.* To provide for contingencies requiring sudden expenditure and for unforeseen opportunities of advantageous purchases, and also to hold an asset of which the value is fixed in terms of money to meet a subsequent liability fixed in terms of money, are further motives for holding cash.

The strength of all these three types of motive will partly depend on the cheapness and the reliability of methods of obtaining cash, when it is required, by some form of temporary borrowing, in particular by overdraft or its equivalent. For there is no necessity to hold idle cash to bridge over intervals if it can be obtained without difficulty at the moment when it is actually required. Their strength will also depend on what we may term the relative cost of holding cash. If the cash can only be retained by forgoing the purchase of a profitable asset, this increases the cost and thus weakens the motive towards holding a given amount of cash. If deposit interest is earned or if bank charges are avoided by holding cash, this decreases the cost and strengthens the motive. It may be, however, that this is likely to be a minor factor except where large changes in the cost of holding cash are in question.

(iv) There remains the *Speculative-motive.* This needs a more detailed examination than the others, both because it is less well understood and because it is particularly important in transmitting the effects of a *change* in the quantity of money.

In normal circumstances the amount of money required to satisfy the transactions-motive and the precautionary-motive is mainly a resultant of the general activity of the economic system and of the level of money-income. But it is by playing on the speculative-motive that monetary management (or, in the absence of management, chance changes in the quantity of money) is brought to bear on the economic

system. For the demand for money to satisfy the former motives is generally irresponsive to any influence except the actual occurrence of a change in the general economic activity and the level of incomes; whereas experience indicates that the aggregate demand for money to satisfy the speculative-motive usually shows a continuous response to gradual changes in the rate of interest, i.e. there is a continuous curve relating changes in the demand for money to satisfy the speculative motive and changes in the rate of interest as given by changes in the prices of bonds and debts of various maturities.

Indeed, if this were not so, 'open market operations' would be impracticable. I have said that experience indicates the continuous relationship stated above, because in normal circumstances the banking system is in fact always able to purchase (or sell) bonds in exchange for cash by bidding the price of bonds up (or down) in the market by a modest amount; and the larger the quantity of cash which they seek to create (or cancel) by purchasing (or selling) bonds and debts, the greater must be the fall (or rise) in the rate of interest. Where, however, (as in the United States, 1933–1934) open-market operations have been limited to the purchase of very short-dated securities, the effect may, of course, be mainly confined to the very short-term rate of interest and have but little reaction on the much more important long-term rates of interest.

In dealing with the speculative-motive it is, however, important to distinguish between the changes in the rate of interest which are due to changes in the supply of money available to satisfy the speculative-motive, without there having been any change in the liquidity function, and those which are primarily due to changes in expectation affecting the liquidity function itself. Open-market operations may, indeed, influence the rate of interest through both channels; since they may not only change the volume of

money, but may also give rise to changed expectations concerning the future policy of the central bank or of the government. Changes in the liquidity function itself, due to a change in the news which causes revision of expectations, will often be discontinuous, and will, therefore, give rise to a corresponding discontinuity of change in the rate of interest. Only, indeed, in so far as the change in the news is differently interpreted by different individuals or affects individual interests differently will there be room for any increased activity of dealing in the bond market. If the change in the news affects the judgment and the requirements of everyone in precisely the same way, the rate of interest (as indicated by the prices of bonds and debts) will be adjusted forthwith to the new situation without any market transactions being necessary.

Thus, in the simplest case, where everyone is similar and similarly placed, a change in circumstances or expectations will not be capable of causing any displacement of money whatever;—it will simply change the rate of interest in whatever degree is necessary to offset the desire of each individual, felt at the previous rate, to change his holding of cash in response to the new circumstances or expectations; and, since everyone will change his ideas as to the rate which would induce him to alter his holdings of cash in the same degree, no transactions will result. To each set of circumstances and expectations there will correspond an appropriate rate of interest, and there will never be any question of anyone changing his usual holdings of cash.

In general, however, a change in circumstances or expectations will cause some realignment in individual holdings of money;—since, in fact, a change will influence the ideas of different individuals differently by reasons partly of differences in environment and the reason for which money is held and partly of differences in knowledge and interpretation of the

new situation. Thus the new equilibrium rate of interest will be associated with a redistribution of money-holdings. Nevertheless it is the change in the rate of interest, rather than the redistribution of cash, which deserves our main attention. The latter is incidental to individual differences, whereas the essential phenomenon is that which occurs in the simplest case. Moreover, even in the general case, the shift in the rate of interest is usually the most prominent part of the reaction to a change in the news. The movement in bond-prices is, as the newspapers are accustomed to say, 'out of all proportion to the activity of dealing';—which is as it should be, in view of individuals being much more similar than they are dissimilar in their reaction to news.

II

Whilst the amount of cash which an individual decides to hold to satisfy the transactions-motive and the precautionary-motive is not entirely independent of what he is holding to satisfy the speculative-motive, it is a safe first approximation to regard the amounts of these two sets of cash-holdings as being largely independent of one another. Let us, therefore, for the purposes of our further analysis, break up our problem in this way.

Let the amount of cash held to satisfy the transactions- and precautionary-motives be M_1, and the amount held to satisfy the speculative-motive be M_2. Corresponding to these two compartments of cash, we then have two liquidity functions L_1 and L_2. L_1 mainly depends on the level of income, whilst L_2 mainly depends on the relation between the current rate of interest and the state of expectation. Thus

$$M = M_1 + M_2 = L_1(Y) + L_2(r),$$

where L_1 is the liquidity function corresponding to

an income Y, which determines M_1, and L_2 is the liquidity function of the rate of interest r, which determines M_2. It follows that there are three matters to investigate: (i) the relation of changes in M to Y and r, (ii) what determines the shape of L_1, (iii) what determines the shape of L_2.

(i) The relation of changes in M to Y and r depends, in the first instance, on the way in which changes in M come about. Suppose that M consists of gold coins and that changes in M can only result from increased returns to the activities of gold-miners who belong to the economic system under examination. In this case changes in M are, in the first instance, directly associated with changes in Y, since the new gold accrues as someone's income. Exactly the same conditions hold if changes in M are due to the government printing money wherewith to meet its current expenditure;—in this case also the new money accrues as someone's income. The new level of income, however, will not continue sufficiently high for the requirements of M_1 to absorb the whole of the increase in M; and some portion of the money will seek an outlet in buying securities or other assets until r has fallen so as to bring about an increase in the magnitude of M_2 and at the same time to stimulate a rise in Y to such an extent that the new money is absorbed either in M_2 or in the M_1 which corresponds to the rise in Y caused by the fall in r. Thus at one remove this case comes to the same thing as the alternative case, where the new money can only be issued in the first instance by a relaxation of the conditions of credit by the banking system, so as to induce someone to sell the banks a debt or a bond in exchange for the new cash.

It will, therefore, be safe for us to take the latter case as typical. A change in M can be assumed to operate by changing r, and a change in r will lead to a new equilibrium partly by changing M_2 and partly

by changing Y and therefore M_1. The division of the increment of cash between M_1 and M_2 in the new position of equilibrium will depend on the responses of investment to a reduction in the rate of interest and of income to an increase in investment.[1] Since Y partly depends on r, it follows that a given change in M has to cause a sufficient change in r for the resultant changes in M_1 and M_2 respectively to add up to the given change in M.

(ii) It is not always made clear whether the income-velocity of money is defined as the ratio of Y to M or as the ratio of Y to M_1. I propose, however, to take it in the latter sense. Thus if V is the income-velocity of money,

$$L_1(Y) = \frac{Y}{V} = M_1.$$

There is, of course, no reason for supposing that V is constant. Its value will depend on the character of banking and industrial organisation, on social habits, on the distribution of income between different classes and on the effective cost of holding idle cash. Nevertheless, if we have a short period of time in view and can safely assume no material change in any of these factors, we can treat V as nearly enough constant.

(iii) Finally there is the question of the relation between M_2 and r. We have seen in chapter 13 that *uncertainty* as to the future course of the rate of interest is the sole intelligible explanation of the type of liquidity-preference L_2 which leads to the holding of cash M_2. It follows that a given M_2 will not have a definite quantitative relation to a given rate of interest of r;—what matters is not the *absolute* level of r but the degree of its divergence from what is considered a fairly *safe* level of r, having regard to those calculations of probability which are being relied on. Nevertheless, there are two reasons for expecting that, in

[1] We must postpone to Book V the question of what will determine the character of the new equilibrium.

any given state of expectation, a fall in r will be associated with an increase in M_2. In the first place, if the general view as to what is a safe level of r is unchanged, every fall in r reduces the market rate relatively to the 'safe' rate and therefore increases the risk of illiquidity; and, in the second place, every fall in r reduces the current earnings from illiquidity, which are available as a sort of insurance premium to offset the risk of loss on capital account, by an amount equal to the difference between the *squares* of the old rate of interest and the new. For example, if the rate of interest on a long-term debt is 4 per cent, it is preferable to sacrifice liquidity unless on a balance of probabilities it is feared that the long-term rate of interest may rise faster than by 4 per cent of itself per annum, i.e. by an amount greater than 0·16 per cent per annum. If, however, the rate of interest is already as low as 2 per cent, the running yield will only offset a rise in it of as little as 0·04 per cent per annum. This, indeed, is perhaps the chief obstacle to a fall in the rate of interest to a very low level. Unless reasons are believed to exist why future experience will be very different from past experience, a long-term rate of interest of (say) 2 per cent leaves more to fear than to hope, and offers, at the same time, a running yield which is only sufficient to offset a very small measure of fear.

It is evident, then, that the rate of interest is a highly psychological phenomenon. We shall find, indeed, in Book V that it cannot be in equilibrium at a level *below* the rate which corresponds to full employment; because at such a level a state of true inflation will be produced, with the result that M_1 will absorb ever-increasing quantities of cash. But at a level *above* the rate which corresponds to full employment, the long-term market-rate of interest will depend, not only on the current policy of the monetary authority, but also on market expectations concerning its future policy. The

short-term rate of interest is easily controlled by the monetary authority, both because it is not difficult to produce a conviction that its policy will not greatly change in the very near future, and also because the possible loss is small compared with the running yield (unless it is approaching vanishing point). But the long-term rate may be more recalcitrant when once it has fallen to a level which, on the basis of past experience and present expectations of *future* monetary policy, is considered 'unsafe' by representative opinion. For example, in a country linked to an international gold standard, a rate of interest lower than prevails elsewhere will be viewed with a justifiable lack of confidence; yet a domestic rate of interest dragged up to a parity with the *highest* rate (highest after allowing for risk) prevailing in any country belonging to the international system may be much higher than is consistent with domestic full employment.

Thus a monetary policy which strikes public opinion as being experimental in character or easily liable to change may fail in its objective of greatly reducing the long-term rate of interest, because M_2 may tend to increase almost without limit in response to a reduction of r below a certain figure. The same policy, on the other hand, may prove easily successful if it appeals to public opinion as being reasonable and practicable and in the public interest, rooted in strong conviction, and promoted by an authority unlikely to be superseded.

It might be more accurate, perhaps, to say that the rate of interest is a highly conventional, rather than a highly psychological, phenomenon. For its actual value is largely governed by the prevailing view as to what its value is expected to be. *Any* level of interest which is accepted with sufficient conviction as *likely* to be durable *will* be durable; subject, of course, in a changing society to fluctuations for all kinds of reasons round the expected normal. In particular, when M_1

is increasing faster than M, the rate of interest will rise, and *vice versa*. But it may fluctuate for decades about a level which is chronically too high for full employment;—particularly if it is the prevailing opinion that the rate of interest is self-adjusting, so that the level established by convention is thought to be rooted in objective grounds much stronger than convention, the failure of employment to attain an optimum level being in no way associated, in the minds either of the public or of authority, with the prevalence of an inappropriate range of rates of interest.

The difficulties in the way of maintaining effective demand at a level high enough to provide full employment, which ensue from the association of a conventional and fairly stable long-term rate of interest with a fickle and highly unstable marginal efficiency of capital, should be, by now, obvious to the reader.

Such comfort as we can fairly take from more encouraging reflections must be drawn from the hope that, precisely because the convention is not rooted in secure knowledge, it will not be always unduly resistant to a modest measure of persistence and consistency of purpose by the monetary authority. Public opinion can be fairly rapidly accustomed to a modest fall in the rate of interest and the conventional expectation of the future may be modified accordingly; thus preparing the way for a further movement—up to a point. The fall in the long-term rate of interest in Great Britain after her departure from the gold standard provides an interesting example of this;—the major movements were effected by a series of discontinuous jumps, as the liquidity function of the public, having become accustomed to each successive reduction, became ready to respond to some new incentive in the news or in the policy of the authorities.

III

We can sum up the above in the proposition that in any given state of expectation there is in the minds of the public a certain potentiality towards holding cash beyond what is required by the transactions-motive or the precautionary-motive, which will realise itself in actual cash-holdings in a degree which depends on the terms on which the monetary authority is willing to create cash. It is this potentiality which is summed up in the liquidity function L_2.

Corresponding to the quantity of money created by the monetary authority, there will, therefore, be *cet. par.* a determinate rate of interest or, more strictly, a determinate complex of rates of interest for debts of different maturities. The same thing, however, would be true of any other factor in the economic system taken separately. Thus this particular analysis will only be useful and significant in so far as there is some specially direct or purposive connection between changes in the quantity of money and changes in the rate of interest. Our reason for supposing that there is such a special connection arises from the fact that, broadly speaking, the banking system and the monetary authority are dealers in money and debts and not in assets or consumables.

If the monetary authority were prepared to deal both ways on specified terms in debts of all maturities, and even more so if it were prepared to deal in debts of varying degrees of risk, the relationship between the complex of rates of interest and the quantity of money would be direct. The complex of rates of interest would simply be an expression of the terms on which the banking system is prepared to acquire or part with debts; and the quantity of money would be the amount which can find a home in the possession of individuals who—after taking account of all relevant circumstances —prefer the control of liquid cash to parting with it

in exchange for a debt on the terms indicated by the market rate of interest. Perhaps a complex offer by the central bank to buy and sell at stated prices gilt-edged bonds of all maturities, in place of the single bank rate for short-term bills, is the most important practical improvement which can be made in the technique of monetary management.

To-day, however, in actual practice, the extent to which the price of debts as fixed by the banking system is 'effective' in the market, in the sense that it governs the actual market-price, varies in different systems. Sometimes the price is more effective in one direction than in the other; that is to say, the banking system may undertake to purchase debts at a certain price but not necessarily to sell them at a figure near enough to its buying-price to represent no more than a dealer's turn, though there is no reason why the price should not be made effective both ways with the aid of open-market operations. There is also the more important qualification which arises out of the monetary authority not being, as a rule, an equally willing dealer in debts of all maturities. The monetary authority often tends in practice to concentrate upon short-term debts and to leave the price of long-term debts to be influenced by belated and imperfect reactions from the price of short-term debts;—though here again there is no reason why they need do so. Where these qualifications operate, the directness of the relation between the rate of interest and the quantity of money is correspondingly modified. In Great Britain the field of deliberate control appears to be widening. But in applying this theory in any particular case allowance must be made for the special characteristics of the method actually employed by the monetary authority. If the monetary authority deals only in short-term debts, we have to consider what influence the price, actual and prospective, of short-term debts exercises on debts of longer maturity.

Thus there are certain limitations on the ability of the monetary authority to establish any given complex of rates of interest for debts of different terms and risks, which can be summed up as follows:

(1) There are those limitations which arise out of the monetary authority's own practices in limiting its willingness to deal to debts of a particular type.

(2) There is the possibility, for the reasons discussed above, that, after the rate of interest has fallen to a certain level, liquidity-preference may become virtually absolute in the sense that almost everyone prefers cash to holding a debt which yields so low a rate of interest. In this event the monetary authority would have lost effective control over the rate of interest. But whilst this limiting case might become practically important in future, I know of no example of it hitherto. Indeed, owing to the unwillingness of most monetary authorities to deal boldly in debts of long term, there has not been much opportunity for a test. Moreover, if such a situation were to arise, it would mean that the public authority itself could borrow through the banking system on an unlimited scale at a nominal rate of interest.

(3) The most striking examples of a complete breakdown of stability in the rate of interest, due to the liquidity function flattening out in one direction or the other, have occurred in very abnormal circumstances. In Russia and Central Europe after the war a currency crisis or flight from the currency was experienced, when no one could be induced to retain holdings either of money or of debts on any terms whatever, and even a high and rising rate of interest was unable to keep pace with the marginal efficiency of capital (especially of stocks of liquid goods) under the influence of the expectation of an ever greater fall in the value of money; whilst in the United States at certain dates in 1932 there was a crisis of the opposite kind—a financial crisis or crisis of liquidation, when

scarcely anyone could be induced to part with holdings of money on any reasonable terms.

(4) There is, finally, the difficulty discussed in section IV of chapter 11, p. 144, in the way of bringing the effective rate of interest below a certain figure, which may prove important in an era of low interest-rates; namely the intermediate costs of bringing the borrower and the ultimate lender together, and the allowance for risk, especially for moral risk, which the lender requires over and above the pure rate of interest. As the pure rate of interest declines it does not follow that the allowances for expense and risk decline *pari passu*. Thus the rate of interest which the typical borrower has to pay may decline more slowly than the pure rate of interest, and may be incapable of being brought, by the methods of the existing banking and financial organisation, below a certain minimum figure. This is particularly important if the estimation of moral risk is appreciable. For where the risk is due to doubt in the mind of the lender concerning the honesty of the borrower, there is nothing in the mind of a borrower who does not intend to be dishonest to offset the resultant higher charge. It is also important in the case of short-term loans (e.g. bank loans) where the expenses are heavy;—a bank may have to charge its customers $1\frac{1}{2}$ to 2 per cent., even if the pure rate of interest to the lender is nil.

IV

At the cost of anticipating what is more properly the subject of chapter 21 below it may be interesting briefly at this stage to indicate the relationship of the above to the quantity theory of money.

In a static society or in a society in which for any other reason no one feels any uncertainty about the future rates of interest, the liquidity function L_2, or the propensity to hoard (as we might term it), will

always be zero in equilibrium. Hence in equilibrium $M_2 = 0$ and $M = M_1$; so that any change in M will cause the rate of interest to fluctuate until income reaches a level at which the change in M_1 is equal to the supposed change in M. Now $M_1 V = Y$, where V is the income-velocity of money as defined above and Y is the aggregate income. Thus if it is practicable to measure the quantity, O, and the price, P, of current output, we have $Y = OP$, and, therefore, $MV = OP$; which is much the same as the quantity theory of money in its traditional form.[1]

For the purposes of the real world it is a great fault in the quantity theory that it does not distinguish between changes in prices which are a function of changes in output, and those which are a function of changes in the wage-unit.[2] The explanation of this omission is, perhaps, to be found in the assumptions that there is no propensity to hoard and that there is always full employment. For in this case, O being constant and M_2 being zero, it follows, if we can take V also as constant, that both the wage-unit and the price-level will be directly proportional to the quantity of money.

[1] If we had defined V, not as equal to Y/M_1 but as equal to Y/M, then, of course, the quantity theory is a truism which holds in all circumstances, though without significance.

[2] This point will be further developed in chapter 21 below.