The Rate of Interest

The problem to be discussed is the determination of the rate of interest in a closed economy, working under laissez faire in the sense that the authorities use no means to influence conditions except monetary policy.

The question is to some extent imaginary because in the days when laissez faire ruled an important influence on the rate of interest in any one country was the state of its balance of payments, and the objective of monetary policy was control of the foreign exchanges. Now the break-up of the world capital market, and exchange control, have largely insulated interest rates in each country. But there is no longer laissez faire in other respects. However, our problem is sufficiently complicated to justify drastic simplification.

1. Introduction

The most important influences upon interest rates—which account for, say, the difference between 30% in an Indian village and 5% in London—are social, legal, and institutional. Side by side with the industrial revolution went great technical progress in the provision of credit and the reduction of lender's risk and great changes in social habits favourable to lending; and in the broad sweep of history these considerations are more significant than any others. But we are here concerned with an economy in which the most up-to-date credit facilities may be taken for granted and a capitalist system is fully developed.
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First let us consider the influence upon interest rates of the "fundamental phenomena of Productivity and Thrift". It is generally agreed that a fall in interest rates tends to stimulate investment and that a low rate of interest is more likely to discourage than to encourage saving. In any given situation, then, we may say that there is some value of the rate of interest so low as to lead to full employment (but at times this rate may be negative). The full-employment rate is strongly influenced by the "real force" of thrift and, if not by the "real force" of productivity, at least by beliefs about the future profitability of capital, which is related to it. In a laissez faire competitive economy, with free wage-bargaining, if the full-employment rate were ever above the actual rate, inflation would set in through a rise of money-wage rates and the rate of interest would be driven up. The full-employment value of the rate of interest may therefore be regarded as, in a certain sense, a lower limit to the possible value of the rate of interest. If this limit always lies far below any value of the actual rate of interest ever experienced, it has little influence on the actual rate. But if from time to time the "real forces" sweep the full-employment rate above the actual rate, and force the actual rate up (whether by causing inflation or by inducing the monetary authorities to raise the actual rate in order to avoid inflation), then clearly they do play a part in determining the course of the actual rate.¹

¹ Robertson, Essays in Monetary Theory (32), p. 25.

² Cf. below, p. 129.

¹ The theory that, if money wages are sufficiently variable, the rate of interest automatically tends to its full-employment value is discussed below, p. 75 et seq. Even when this theory can be made to seem plausible on its own ground, it has no application here, for it belongs to long-period static theory, while the purpose of this paper is to sketch a theory of interest which might be useful in historical analysis.

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Moreover, an important influence upon the actual rate, at any moment, are expectations of the future course of interest rates, and expectations are strongly influenced by the historical experience of interest rates which the community has lived through. If the real forces play some part in shaping that historical experience, they have some influence upon the position of the rate of interest even when the full-employment rate, at the moment, is far below it. Thus the real forces have a roundabout influence on the actual rate of interest, as well as upon the full-employment rate. There is then, after all, a Cheshire cat to grin at Professor Robertson,² but it often happens that the grin, cheerful or sour, remains after the circumstances which give rise to it in the past have completely vanished from the present scene.

2. THE STRUCTURE OF THE MARKET

Let us turn to the monetary forces acting on the rate of interest. Keynes' theory treated the rate of interest as determined by the demand and supply of money. This was a useful simplification in the pioneering days of the theory, but it was always obvious that there is no such thing as the rate of interest and that the demand and supply of every type of asset has just as much right to be considered as the demand and supply of money.

To develop a more refined theory the notion of liquidity preference, measured by the reward required to induce owners of wealth to hold assets other than money, must be broken up into a number of aspects. Among the disadvantages of various kinds of assets compared to money we may distinguish:

¹ [32], p. 25.
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1. Illiquidity in the narrow sense. Liquidity partly consists in the capacity of an asset to be realised in money. A limited and imperfect market, the cost and trouble of making a sale, and the time required to effect it, reduce the liquidity of an asset quite apart from variability in its price. Liquidity in the narrow sense depends upon the power to realise its value in cash, whatever the value may be at the moment. To avoid confusion with Keynes' language we will call this quality "convenience" instead of "liquidity".

2. Uncertainty of future capital value, or capital-uncertainty for short, due not to any fear of failure by the borrower but to the possibility of changes in capital values owing to changes in the ruling rate of interest. (This is the main ingredient in Keynes' conception of liquidity preference. He regards the rate of interest primarily as a premium against the possible loss of capital if an asset has to be realised before its redemption date.)

3. Lender's risk, that is, the fear of partial or total failure of the borrower.

Further, when comparing long-term bonds with other paper assets we have to add one more factor:

4. Uncertainty as to the income that a sum of money now committed to the asset will yield in the future, or income-uncertainty for short.

These qualities make up the character, or, so to say, natural colour, of various types of assets. (The relationship of present to expected prices is a separate element in the complex of influences governing the demand for the various assets at any moment.)

A modern capital market represents a bewildering variety of assets, with these qualities in all sorts of combinations. To make our inquiry manageable we must draw a simplified and stylised picture of the market, selecting only a few sharply defined types of assets, say three months' bills, irredeemable bonds, and ordinary shares. We will further simplify by assuming that owners of wealth hold only money or paper assets, while real assets are owned by entrepreneurs who hold them against borrowed funds; that money consists only of bank deposits, without distinction between current and deposit accounts; and that the quantity of money is rigidly determined by the basis of credit which the Central Bank chooses to provide, as in the ideal text-book picture of the British banking system.

1 The distinction between shares and loans raises some legal and philosophical problems. At one point in the General Theory[91], chapter XII, Keynes creates confusion by calling ordinary shares "real assets", and describing a purchase of shares on the Stock Exchange as an act of investment. It seems both simpler and less unrealistic to go to the opposite extreme, treating shares as a type of paper asset like the rest and regarding their yield as one of the rates of interest. This is, in essence, the way that those in charge of real investment decisions probably most often look at the matter; to the managing director of a joint-stock company there is a great deal in common between a share-holder and a creditor. The conception of yield also presents some complications. It may be calculated on the basis of earnings or of dividends, and on the basis of expected future returns or past realised returns. We shall not enter into these difficulties in the present discussion, but in general we are concerned with prospective yield.

2 An entrepreneur operating real capital which he owns is regarded as pro tanto an owner of wealth lending to himself. Cf. Modigliani, "Liquidity Preference and the Theory of Interest" [28], p. 30. Where a citizen lives in his own house, we may regard him as an owner of wealth lending to himself as an entrepreneur who sells to himself as a consumer.

When there is doubt about the future purchasing power of money, owners of wealth become entrepreneurs; that is to say, there is "flight into real values". The whole question of liquidity then takes on quite a different aspect, and money ceases to be the asset to which liquidity preference attaches. We shall not concern ourselves with this problem, but assume that we are discussing a community which has confidence in the future purchasing power of its money.

3 The argument can easily be modified to fit the case where the supply of money has some elasticity and responds to changes in the rate of interest which the banks can earn.
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Bills we will assume to be perfectly "good" in the sense that they are free of lender's risk, and they are so short-dated that capital-uncertainty is very small. Bills then differ from money in little except their inferior "convenience". Our bonds, we may suppose, also are perfectly good, and no less "convenient" than bills, in the sense that they can be readily marketed at any time (or pledged against a loan).

The difference between them arises from uncertainty. In a world where past experience has been that interest rates vary from time to time there is uncertainty about future interest rates, in the sense that, whatever an individual may believe about the most probable future course of interest rates, he does not hold his belief with perfect conviction. An owner of wealth who buys a bond today knows what his capital will be in three months' time, but he is uncertain what interest he will then be able to get by re-investing it. If he buys a bond, he knows his income for as long as he likes to hold the bond, but he is uncertain about what his capital will be worth at any date in the future. Perfectly good bills thus offer negligible capital-uncertainty, but relatively high income-uncertainty, while perfectly good bonds offer perfect certainty of income, but relatively high capital-uncertainty.

The complex of demands and supplies is not static, but is moving slowly through time. Over any period there is an increment to total wealth from saving equal to the borrowing for investment (and budget deficits) that has taken place during the period. The total of wealth,
representing a demand for paper assets, increases with the supply. But the supply of any particular type may alter relatively to the demand for it. For instance, a budget deficit, financed by selling bonds, will generate savings which the owners wish to put partly into money or shares. The supply of bonds is then increasing relatively to demand.

A borrower who is free to choose the kind of paper assets he creates will try to offer those which require the lowest interest, and this sets up a certain tendency for supply gradually to be adjusted to demand (though changes in business methods—the growth of self-financing, the decay of the trade bill—may alter supply in a way quite unrelated to changes in demand).

There is also a much more immediate way in which supply is adjusted to demand. Where there is a difference between interest rates there is a possible source of profit. If the short rate were found on the average to rule above the long, because of the dominance in the market of widows and orphans with a strong preference for bonds, and if this situation were expected to continue, financial houses could issue bonds, which would be taken up by the widows and orphans, and use the funds thus obtained to carry bills. They would undergo a risk, for if there were an unforeseen change, and the short rate fell permanently, they could only get out of the new unprofitable business by redeeming their bonds, which might meanwhile have risen in price. Thus the long rate would still have to remain normally lower than the short rate.

In the reverse case (which is the usual one, at least in recent times) where preference for capital-certainty predominates in the market, so that the bond rate exceeds the bill rate, there is an income to be made by borrowing short and lending long. This is commonly done by taking a bank advance. Assuming the basis of credit to remain constant, the banks must sell other assets when they increase advances, and their assets are short-dated (in our simplified world they could only hold bills) so that the effect is the same as though dealers in credit issued bills in order to hold bonds. The risk involved in this operation is that there may be an unforeseen rise in the bill rate, so that the dealers have either to renew their loans at a higher cost or to sell out bonds whose price may have fallen. Thus these operations require a margin between long and short term rates and, since there is not an unlimited amount of credit available to dealers, the margin they require will be larger the greater the amount of bonds that they are holding.

Investment trusts issue what are intended to be less speculative securities in order to carry more speculative ones.

Operations such as these to some extent smooth out the differences in demand for securities of different types and bring the various interest rates closer together.

3. Changes in the Quantity of Money and in Expectations

Preferences for various types of asset, relatively to the supplies of them, determine the general pattern of interest rates, and it is against this sort of background that day-to-day changes in interest rates occur. The pattern most commonly found in actual markets is such that normally the bill rate is lower than the bond rate, and the yields of shares higher.

Given the general background, there are two quite distinct types of influence which play upon the equilibrium pattern of rates. One is the state of expectations and the other is the supply of money. To discuss them
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separately we require to be able to assume one constant when the other varies. It is difficult to frame the assumption that expectations are given without sawing off the bough we are sitting on. It is easiest to discuss expectations if they are quite definite. Everything can then be reduced to arithmetic. But if we assume that owners of wealth have clear and unanimous expectations about the exact future course of the prices of assets, in which they believe with perfect confidence, then we have ruled out uncertainty and stepped into a world quite unlike the one we want to discuss. Moreover, we have landed ourselves in a logical impasse, for either the expectations will turn out to be correct, in which case there is no more to be said, or they will turn out mistaken, in which case perfect confidence cannot persist.

The whole subject of expectations bristles with psychological and philosophical difficulties, and I can offer only a sketchy and superficial treatment of it. For the moment let us be content to assume that the bond rate is expected to move around the average level that has been experienced in the recent past, so that when it falls below that level it is expected to rise, some time or other, and when it rises above, to fall, but that everyone's view is hazy as to how long it will take to return to the average value and how far it will go meanwhile, so that there is great uncertainty about what its value will be at any particular date in the future. For simplicity of exposition we will suppose that we are examining the market at a moment when today's bond rate is equal to the average value. Further, we will assume that profits are expected to continue at the same level as in the recent past, so that the prices of shares are not expected to move except in

response to changes in the rate of interest. Finally, we will neglect speculators operating on day-to-day changes in the price of assets.

Having thus tethered expectations, let us examine the effect upon the market of a change in the quantity of money. A change in the amount of bank deposits is a special case of the kind of change in the stock of assets relative to the total of wealth which we have already discussed. The essence of the matter is that when the Central Bank, say, increases the basis of credit the member banks buy assets from the market to an amount which restores the normal ratio of their cash reserves to other assets. They thus reduce the amount of assets to be held by the market and so raise their prices. To maintain our simplifying assumptions we will assume that the banks buy only bills. The immediate consequence is a fall in the rate of interest on bills. What effect does this have upon the bond rate?

The bond rate is bound to be affected, for even if all owners of wealth have strong preferences, and are settled far from the frontier between bonds and bills, so that it would need a very large change in values to shift them, yet dealers in credit will react to small changes and so provide a continuously sensitive frontier between bills and bonds. The profit to be made by selling a bill and buying a bond is the difference in the interest on them for three months minus the fall (or plus the rise) in the price of the bond over three months. Dealing at today's prices, the difference in interest which will be enjoyed is known, but the change in price of the bond is unknown. A fall in the short rate increases the difference in interest rates, and so raises the demand for bonds, but the consequent rise in the price of bonds enhances the likelihood of a fall

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2 See p. 106.
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in their price in the future. If expectations are clear and
definite, only a very small fall in the long-term rate of
interest can occur. It needs a fall of only 4% in the price
of bonds over three months to wipe out the effect of a fall
of 1% in the bill rate per annum, and a rise in today's
price of bonds by 4% means a fall in the bond rate of
interest in the ratio 400:401.1 Suppose, for example, that
there is a clear expectation that the bond rate will be back
to its average in three months' time; then today's rate
cannot fall by more than this ratio in response to each 1%
fall in the bill rate.2 But if expectations of what the bond
rate will be in three months' time are vague and dubious,
the power of a rise in today's price of bonds to wipe out
the attraction of holding them is so much the weaker. Thus
the effect of a fall in the short rate upon the long is greater,
the greater the uncertainty in which the market dwells.

In the 'Treatise on Money,' Keynes, so to speak, dramatised
uncertainty as the existence of 'two views' leading to a
'bull-bear position'—that is, a dispersion of opinions
each confidently held.3 The degree of uncertainty in the
market as a whole then depends on the variety of opinion
within it. The sam.e effects will follow where everyone is alike,
but no one feels confident that his own best guess of what
the future holds will turn out to be right. In any situation
where there is inadequate evidence on which to base
predictions, both elements will be present. Thus a rise
in today's price of bonds will induce some holders of bonds
to sell before others, and will cause many holders to sell
out to some extent. The greater the dispersion of opinion
and the less confidently are opinions held, the greater the
movement of bond prices in response to a given change
in the quantity of money.

We have assumed that expectations of profit are
constant. With lower interest rates the frontiers between
bills and shares and bonds and shares are no longer in
equilibrium at the old rate, and there is a sympathetic
movement in the price of shares, governed by similar
considerations to those which influence the movement
of bond prices. Thus an increase in the quantity of
money lowers the whole complex of interest rates.

We may now look at the same situation the other way
up and inquire what has happened to the increment of
money which has been created. At any moment some
money is in course of travelling round the active cir-
culation—from income earner to shopkeeper, from shop-
keeper to producer, from producer to income earner, and
so back again. Some is in the financial circuit, passing
between buyers and sellers of paper assets. Some is lodged
in what we may call a 'short hoard' either because its
owner, who has recently made some savings, is shortly
going to spend it in buying securities, or because its owner
(who may be an entrepreneur) has some large-scale
purchase of goods shortly to make. These short hoards
may reasonably be classed as part of the active circulation.
Some money is lodged, at any moment, in 'long hoards'
because it has come into the hands of owners who choose
to hold a part of their wealth in the form of money. Some
is in 'bear hoards' whose owners are waiting for a fall
in bond and share prices to go back into the market.

Some bears, and some owners of wealth with a high
preference for capital-certainty, hold bills rather than
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money. But it is natural to assume that, in the main, money is preferred to bills for long hoards because dealing in bills is a specialised business, for which many owners of long hoards have no inclination, and because it is not practicable in small sums. The advantage of money over bills for bear hoards is that it makes it possible to switch back into securities in less than three months, if that seems desirable, without the cost and the capital risk of switching into and out of bills.

Short hoards, long hoards, and bear hoards correspond to convenience, precaution, and speculation, mentioned by Keynes as motives for holding money.¹

Now, the fall in interest rates which has occurred may slow down the active circulation somewhat. Money may idle a little longer in short hoards—the motive for economising balances is less—but this effect will be slight, for the velocity of active circulation is fixed by fairly rigid habits. Thus, when there is an increase in money relative to national income, most of the new money cannot find a lodgement unless long or bear hoards are increased.³

The yields of all paper assets have fallen, and this in itself may lead some owners of wealth to prefer money. But the main effect is that the rise in the price of bonds and shares has enhanced the fear of a fall in their value in the future, and so set a bearish movement on foot. Money, we have supposed, is usually preferred to bills for bear hoarding; if, however, some of the bears prefer bills, the bill rate is reduced all the more, and there is a further movement over the bill frontier into money.

Thus the result of increasing the quantity of money is to lower the short rate and to pull the long rate below its expected value to the point where the combined effect of these two movements increases hoards by the amount of the increase in the quantity of money.¹ (If the fall in interest rates induces an increase in national income, of course, part of the new money is required for active circulation, and the interest rates will not fall so far.)

A fall in national income relative to the stock of money (abstracting from a consequent change in expectations) has effects similar to the above. A reduction in the quantity of money or rise in national income has the converse effects.

To summarise: given the state of expectations, the long and short rates of interest both fall as the quantity of money increases relatively to national income. The fall in the short rate is steeper than the fall in the long,¹ so that the gap between the two increases with the quantity of money. The less the uncertainty (the more confident and unanimous the market that a departure of the rate of interest from its average value will quickly be reversed), the smaller is the response of the rates of interest to changes in the quantity of money, and the smaller is the gap between the two rates. In the limit, if the market confidently

¹ General Theory [21], pp. 135-6. It is, of course, impossible to draw a hard and fast line between them. Convenience shades into precaution, and precaution would not give rise to a demand for money unless there was an element of speculation present. Cf. Pellet [5], p. 147.

³ Mr. Kallocki ([17], p. 39) suggests that it is only the short rate which is relevant here. But surely this is a mistake. If an individual (or a firm) decides to economise balances in order to enjoy interest he is just as likely to put the money into bonds as bills. See also Kaldor [15], p. 14.

¹ Kaldor seems to deny that hoarding ever occurs ([15], p. 13, footnote), but on closer examination his argument appears to be purely verbal, as he calls deposit money only if they are in active circulation.

¹ If the above is correct, it is misleading to say that the short rate is determined by demand and supply of money while the long rate is determined by the expected future short rate, for one of the main determinants of the demand for money is expectations about the course of the long rate itself.

¹ Unless uncertainty is so great that expectations about the future price of bonds have no influence at all upon the long rate.
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believes that it knows that from tomorrow the rate of interest will be at its past average value, the long and the short rate will be equal to that value today. (In this case liquidity preference in Keynes's sense is absolute.)

So far we have been discussing the situation at a moment of time, with given expectations, but time marches on. We have supposed that expectations of the future interest rates depend upon past experience. When the bond rate is below its past average, expectations tend to be revised as time goes by, and the demand for money tends gradually to fall, but this is a slow process, and before it has had time to produce any effect all sorts of changes occur. Thus uncertainty is kept alive by the chances of history.

It has been objected against this theory that it leaves the rate of interest hanging by its own bootstraps. But there is no escape from the fact that the price today of any

long-lived object with low carrying costs is strongly influenced by expectations about what its price will be in the future. If the rate of interest is hanging by its bootstraps, so is the price of Picasso's paintings.

We have very little knowledge of the influences shaping expectations. Past experience is no doubt the major element in expectations, but experience, as far as one can judge, is compounded in the market with a variety of theories and superstitions and the whole amalgam is played upon from day to day by the influences (including the last bank chairman's speech) which make up what Keynes called the "state of the news". Any theory that is widely believed tends to verify itself, so that there is a large element of "thinking makes it so" in the determination of interest rates. This is all the more true when short-term speculation is prevalent.

A speculator has not the same attitude as an owner of wealth to liquidity, income-uncertainty, or capital-uncertainty. He is concerned with making money by forestalling changes in prices from day to day by "anticipating what average opinion expects the average opinion to be."
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So long as the great bulk of transactions is made by owners of wealth and dealers in credit, the speculator has to guess how they will behave. The effect of speculation is then to speed up the movement of today’s prices towards expected future prices. But, as soon as speculators become an important influence in the market, their business is to speculate on each other’s behaviour. The market then becomes unstable, and falls into the condition described by Keynes under that misleading chapter heading, “The State of Long-Term Expectations.”1 The operations of the speculators cast a thick fog over future prospects for the owners of wealth, increase uncertainty all round, and so raise the general level of interest rates.

They also create a fog for the economist describing the capital market, which very much reduces the cogency of the above type of analysis, and totally deprives it of utility as a source of tips.

4. AN INCREASE IN THE RATE OF INVESTMENT

Abstracting from speculation (for if we do not, there is little to be said) we will now examine the effects of an increase in the rate of investment (say, induced by an improvement in prospective profits) which increases national income but does not go far enough to hit full employment and create inflationary conditions. If the banking system follows the policy of meeting the needs of trade, interest rates are held constant. To make the story interesting we will assume that the quantity of money is not altered.

Investment plans must be made before any actual outlay takes place. If entrepreneurs proceed by issuing shares

1 General Theory [21], chapter XII.

before they begin to place orders for new capital goods, and hold money in short hoards for the time being, there is an increase in demand for money relatively to the supply and an increase in supply of shares relatively to demand, and the interest rates rise before the actual investment begins.1 It is more natural to suppose, however, that entrepreneurs take bank advances as required and retire them by the issue of shares after the investment has been under way for some time.

Possible cases offer an endless variety of patterns. To simplify, we will assume that investment remains steady at the new higher rate during the period that we are discussing, that all investment is financed in the same way, and that it is financed by taking over-drafts which are repaid by issuing securities at a certain interval after they have been drawn upon. With these assumptions, while the investment continues there is a certain volume of bank advances outstanding at any moment, and the supply of securities keeps pace with the addition to wealth due to saving, after an initial wobble, which may go either way according as the issue of securities begins before or after the pattern of saving has become adjusted to the new rate of investment.

We will abstract from the gradual effect of a rise in the proportions of shares to total wealth, and consider only the immediate influences upon interest rates coming from the change in the rate of investment.

Let us compare a date in Period II, when the multiplier has run its course and national income has settled at the level appropriate to the new higher rate of investment, with a date in Period I, when investment was being carried out at the old rate.

1 See Keynes, “Alternative Theories of the Rate of Interest” [19], Economic Journal, June 1937.
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There is now a larger national income, and a larger demand for money in active circulation, including a swollen demand for short hoards, corresponding to the higher level at which saving is running. Entrepreneurs have taken bank advances, and the banks sold out bills, so that the short rate has risen. Bond rates, as usual, have risen in sympathy.

The rise in interest rates puts a brake on the rise in demand for money by increasing the velocity of active circulation; at the same time it has drawn money out of bear and long hoards. The rates of interest have risen to the point where equilibrium is restored at the frontiers around money.

What has happened to shares? The same cause which induces the increase in investment—a rise in prospective profits—gives rise to better and more confident expectations of future dividends. For the time being, at least, the optimism which started investment off appears justified, for profits are in fact ruling higher while investment goes on. The price of shares has therefore risen at least sufficiently to keep yields at the level corresponding to the rate on bonds. (If we allow speculators out of the cage where we are keeping them assumed away, the price of shares may rise to any extent, and the normal relationship between bond and share yields may be reversed.) If this were all, share yields would move sympathetically with the bond rate—that is to say, they would be raised slightly by the increase in demand for money. But there is a further effect. With greater confidence in future profits, credit is improved and the risk attached to shares is felt to be reduced. Different shares will be differently affected.

Professor E. L. Jones (5, p. 149) suggests that hoards held by entrepreneurs fall as general confidence increases. If this effect were to predominate, the rates of interest would normally fall as investment increases.

Keynes himself makes this point, but the habit of thinking in terms of the rate of interest led him to overlook the fact that the most relevant interest rate is likely to be falling when investment is increasing, and to make the quite unnecessary concession to classical ideas that the movement in interest rates which accompanies a boom sets a drag upon the increase in investment.

This argument has not much force in the case of a large established firm, for which there need not be any close connection between the timing of borrowing and of investment, but there is much investment which cannot be undertaken until finance for it has been secured.

General Theory (24), p. 158.
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5. AN INCREASE IN THRIFTINESS

We may now consider the much debated question of the effect of thriftiness on the rate of interest. Our discussion of the "real forces" implied that, in a very broad sense and a very long run, a high state of thriftiness relative to investment opportunities helps to keep interest rates low. In so far as it does so, accumulation of real capital may be greater than it would have been if interest rates had been higher, though not necessarily greater than it would have been if thriftiness had been less. In what follows we are not concerned with such long-run considerations, but with examining the impact of an increase in thriftiness upon interest rates in a very short and in a medium run.

Let us suppose that the thriftiness of our community has increased, which shows itself in the first instance in a reduction in the rate of outlay for consumption goods by some section of the public. We will first consider how the situation would develop if planned investment were unaffected, and then re-examine the influence of what has happened upon investment plans. It simplifies exposition if we postulate that the rate of planned investment is zero, but this means only that sentences such as "the stock of capital is unchanged" are substituted for "the stock of capital is the same as it would have been if this had not happened," and so forth. We must divide time up into periods, not necessarily of the same length. Period I is the time before the change occurred. In Period II consumption is lower than in Period I by the amount of the designed increase of saving but nothing else has had time to alter. Stocks have piled up in the shops. If we value the stocks at full retail prices, including the retailers' profit,

we may say that national income is unchanged. At the end of Period II ex-post saving has occurred equal to the undesigned rise in stocks. In Period III (which is likely to be longer than II) retailers reduce purchases, the fall in national income works its way through the system, and there will be a secondary decline in consumption on top of the first. Stocks have to be reduced to the level appropriate to the new rate of consumption, so that there will be an extra fall in income and fall in employment while the redundant stocks of Period I and the undesigned accumulation of Period II are worked off. In Period IV disinvestment in stocks has come to an end, there is a recovery of employment relatively to Period III, and we settle down to a new position of short-period equilibrium with a lower level of consumption appropriate to the new higher thriftiness and the unchanged rate of investment.

How have the rates of interest been behaving? Let us place ourselves at the point of time where Period II ends. We find members of the public with an increment of wealth compared to their position in Period I. There are a great many possible consequences in the financial sphere. Let us pick out two simple cases:

1. The savers are holding short hoards, equal to their increment of wealth, which they have not yet placed in securities.
2. They have already purchased bonds.

Retailers have acquired real assets to the value of the undesigned increase in stocks. Part of this value is represented by profits which they have failed to realise. According to the convention we have adopted, of calling the national income constant, the missing profits must be regarded as savings which the retailers have, willy-nilly,
invested in stocks. The rest of the value of stocks represents outgoings which they would normally have paid out of receipts, and for which they now require finance. This division of the value of the stocks into two parts complicates the argument. At first we will abstract from it by assuming that the retailers finance the whole value of the stocks in the same way. Methods of finance vary greatly according to the way business is conducted. Again we may pick out a few simple cases from amongst all the possibilities:

(a) The retailers have run down cash balances.
(b) They have taken bank advances.
(c) They have sold bonds which they were formerly holding.

Combining (a) with (c), cash released from retailers’ balances matches the increase in cash held by savers, and nothing alters. Combining (a) with (c), the retailers sell bonds equivalent to those that the savers buy, and again nothing alters. Combining (a) with (c), the savers hoard money and the retailers sell bonds. The demand for money has increased, which raises interest rates in the converse of the manner described above. Besides this, the demand for bonds has fallen, which tends to increase the gap between long and short rates. Combining (b) with (c), the savers have bought bonds and the retailers have parted with money. The rates of interest fall, and the gap between them tends to narrow.

In case (b) the banks have made advances and, since the quantity of money is assumed constant, they have sold out bills. This raises the short rate of interest, and the long rate tends to rise in sympathy. If we combine this with case (a) (savers holding money), the increase in demand for money reinforces the rise in interest rates. If we combine it with (a) (savers holding bonds), the increase in demand for bonds tends to counteract it.

In so far as the various types of case occur together they tend to offset each others’ effects upon the interest rates.

Slight differences are introduced if we take account of the retailers’ missing profits. Suppose that their savings in Period I exceeded the missing profits, and that their personal expenditure is the same in Period II as in Period I; then, in the case which combines (a) and (c), the absorption of cash by savers is equal to the full value of the undesigned accumulation of stocks, while the release of cash by retailers which finances them is short of the full value by the amount of the missing profits. There is thus a net increase in demand for money, and the interest rates rise. And so on.

But the argument has grown tedious. Its upshot is that in Period II the effect upon interest rates is not likely to be large, and, in so far as there is an effect, it may go either way.

Let us now jump over the turbid eddies of Period III and place ourselves at a point of time some way along in Period IV, when things have settled down.

Still assuming, provisionally, that planned investment is unchanged at zero, we have a national income lower than that in Period I by the reduced consumption of the first group of savers plus the reduction brought about by the secondary decline in incomes and employment in accordance with the multiplier. A smaller amount of money is required in active circulation than in Period I. Bank advances have been paid off and (assuming a constant quantity of money) the short rate of interest is lower than in Period I. No net investment has taken place; therefore there has been zero ex post saving over the
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period as a whole (neglecting the effect of disinvestment in stocks and working capital owing to the fall in the level of output), so that the total of outstanding assets and the total of privately owned wealth are unchanged. Abstracting from any change in expectations about the long rate of interest owing to the experiences of the transition period, there has been a fall in the bond rate, in sympathy with the short rate. The consumption trades are doing badly compared to Period I, and shares are likely to be adversely affected. On the very “good” ones the yield may move in sympathy with the fall in bond and short rates, but many will suffer from a rise in riskiness, owing to poor prospects of profit in the consumption trades. Thus our picture is: a lower short rate in Period IV compared to I, a slightly lower bond and best share rate, and a higher yield of shares in general.

This pattern of interest rates does not look very encouraging to investment, and it seems that our provisional assumption of a constant rate of investment must be revised in the downward direction because of the surplus capacity and low profits in the consumption trades and the high cost of industrial borrowing.

6. A CHEAP MONEY POLICY

The last case we will examine is a cheap money policy. A campaign by the monetary authorities to lower interest rates to counter unemployment, if successful, will stimulate activity. Undertaken in a situation in which is already inflationary, it will necessitate stronger anti-inflation measures (such as a larger budget surplus). We are not here concerned with discussing its effectiveness in the first case, or its advisability in the second, but merely to study the mechanics of its operation. This story necessarily

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depends very much upon its institutional and political setting. The following reflects the English scene as far as our stylised picture of the capital market permits.

The first move in the campaign is for the Central Bank to dose the banks with cash, by open market purchases. The amount of advances the banks can make is limited by the demand from good borrowers. The demand is very inelastic (though it shifts violently up and down with the state of trade), so the banks, between whom competition is highly imperfect, see no advantage in cheapening their price. The redundant cash reserve must go into bills. Any rate of return is better than none. The banks with redundant cash find themselves in much the same position as a group of firms with surplus capacity and zero prime costs. If perfect competition prevailed, the bill rate would go to next to nothing and the banks could not cover their costs. They therefore fix up a gentleman’s agreement which keeps the bill rate steady at a low level. The bill rate is maintained at this low level by the Central Bank’s giving another dose of cash whenever it threatens to rise.

If the Central Bank is operating in the old orthodox manner, its power ends here, and the authorities must rely on the dealers in credit to bring the long rates down. Nowadays the authorities reinforce the action of the banking system by going into the bond market directly. If necessary, they issue bills in order to buy bonds, the quantity of money being adjusted to whatever level is required to keep the bill rate at its bottom stop. The low interest rates may slow down the velocity of active circulation so that money, as the saying is, stagnates in pools. Long hoards are swollen by the fall in the current rates and bear hoards by the fact that expected future rates are not yet revised.
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As time goes by, experience of a long rate that is persistently somewhat lower than the expected rate lowers the expected rate and so lowers the actual rate further. The yield on shares falls in sympathy with the bond rates. Thus the whole complex of rates gradually falls through time. If the authorities take it gently and do not try to push the rate down too fast, and if they stick consistently to the policy, once begun, so that the market never has the experience of today's rate being higher than yesterday's, it is hard to discern any limit to the possible fall in interest rates (except the mere technical costs of dealing) so long as the full-employment interest rate is below the actual level of rates or is held below it by a budget surplus or other means.

All goes smoothly so long as the authorities are working with the grain of market opinion. But if they embark on the policy and begin to buy bonds at a time when the long rate is generally expected to rise, they come sharply into conflict with market opinion. So long as the expected rate remains high, they have to go on holding bonds and supplying money for bear hairons. If they persist resolutely, a moment will come when the bears are convinced that the new low rate has come to stay. Money then moves out of bear hoards into bonds, and the authorities can gradually sell off to ex-bears the bonds they have been holding, retire bills, and reduce the quantity of money to the level which will just hold the bill rate at its bottom stop.

But if the authorities' nerves are shaken by the ferocious growls with which the bears have been deafening them all this time, and once allow bond prices to relapse, the growling of the bears turns to joyous yelps of "I told you so" and the expected future bond rate is so much the higher for ever after.

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\textsuperscript{1} Cf. General Theory [21], p. 229.
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