

Some observations on inflation and the long-term rate of interest in South Africa

INTRODUCTION

The question of the effect which inflation has on the long term rate of interest has become a very topical issue in South Africa of late.

Whilst the Republic experienced a relatively moderate rate of inflation up to the middle of 1972 the rate of increase in prices has accelerated remarkably since then. From June 1972 up to January 1974 the consumer price index (seasonally adjusted) increased from 139,7 to 161,5, i.e. by 15,6% over a period of 19 months. From January to March 1974, i.e. over a period of 2 months, the consumer price index (not seasonally adjusted) showed a further increase of 3,0%. All the present signs point towards a continued acceleration in the rate of price increase during the foreseeable future.

Anxiety has been expressed in different quarters about this recent inflationary trend and there can be no doubt about the government's firm intention of curbing this rapid increase in prices as soon as practically possible. It does not seem probable, however, that this objective can be successfully accomplished within the next 12 months and it is considered doubtful if, even thereafter, a return to 'normal' rates of inflation of e.g. 2,5% to 4% per annum will be possible.

In the light of these most recent developments, as well as the prospects for the future, various persons and institutions having to do with the investment of fixed monetary sums on their own behalf or on behalf of their clients have indicated that current long-term rates of interest, even though on the high side when judged by historical standards in South Africa, represent inadequate returns under the currently prevailing conditions. Life insurance companies and pension funds have been amongst the most prominent institutions propagating this view, which is understandable in the light of their responsibility towards their policy-holders and clients. The idea has even been expressed that South Africa should follow the lead of some South American countries, which make provision for a special payment (to compensate for inflation) to be made on any long-term deposit or loan in addition to the normal rate of interest agreed upon. This seems to be necessary in these countries if depositors and lenders are to be persuaded to continue making such deposits or loans.

It does seem topical, therefore, to attempt to ascertain the relationship between the rate of inflation and the long-term rate of interest in South Africa. This paper will attempt to determine this relationship by first considering the relationship between long- and short-term rates of interest; subsequently considering what economic theory teaches us in respect of the relationship under consideration, and following on this, also by considering some of the empirical evidence available on the matter. Attention will then be given to some

special factors which seem to have a bearing on this relationship in the case of present-day South Africa. In the concluding section an attempt will be made to give a broad indication of the probable effect of the rate of price increases on long-term rates of interest in South Africa.

INFLATION AND THE LONG-TERM RATE OF INTEREST

The question may well arise why attention is focused on the long-term rate of interest when attempting to consider the effect of inflation on the rate of interest. Current opinion, as well as economic theory itself, differs as to what the most important explanatory factors are in determining each of the levels of long- and short-term interest rates, but it is usually conceded that the two sets of factors are probably distinct and different.

Furthermore, it seems reasonable to accept the widely held view that, whatever these sets of factors are, and whatever the precise ways in which they relate to one another, it does not seem likely that the rate of inflation figures nearly as prominently (if at all) in the determination of the short-term rate of interest as in that of the long-term rate.

In the case of the short-term rate the supply of funds is largely determined by the chance availability of such funds and this in turn (apart from the effect of deliberate monetary management by the authorities) is the random result of various factors which appear to be largely independent of the tempo of inflation, such as tax and other payments from the private to the public sector, public expenditure, the extent of inflationary financing by the government (or vice versa), and the extent to which liquidity is pumped into or drained from the system via the balance of payments.

The demand for short-term funds is determined by a variety of factors but the rate of price increases (as distinct from the price level) does not seem to figure prominently amongst them.

It is true that the short-term rate of interest seems to be strongly influenced by what is regarded as being the normal long-term rate at any given moment of time. Short-term variations of a very wide magnitude in the relative levels of these two sets of rates do, however, take place from time to time.

The supply of long-term loanable funds, on the other hand, is determined in a more purposeful manner in the light of various factors which do seem to bear more connection with both the rate of interest and the tempo of price increases. This also seems true of the demand for such funds.

It is understandable, therefore, that attention should be focused on the long-term rate of interest when attempting to ascertain the effect of price increases. It

is true that long- and short-term rates are not completely independent of one another but it does seem reasonable to expect that, insofar as inflationary trends affect the short-term rate of interest, this will mainly be done via the effect on the 'normal' level of the long-term rate of interest rather than directly.

THEORETICAL CONSIDERATIONS

The question arises as to what economic theory leads us to expect in this regard. Those institutions and persons pressing for a higher level of interest rates to compensate for the higher rate of price increases experienced recently probably unknowingly base their reasoning upon the same line of thought as Irving Fisher's views expressed around the turn of the century¹ which state that normal (observed) interest rates consist of two components, i.e. the 'real' rate of interest, to which real saving and investment respond and a premium based upon expected changes in the price level.

Persons and institutions currently supporting the view that an increase in long-term rates is unavoidable in South Africa point out, in addition, that at the current rate of inflation, taxation and long-term interest rates in our country, savers in fact earn a negative return on any long-term loans or deposits they may make.

The views of Fisher referred to above, as well as the more sophisticated loanable funds version of the theory of the rate of interest, both accept that the rate of interest is determined by the availability of saving and other investible funds in relation to the demand for such funds. In contrast to this approach, Keynes went to the opposite extreme and claimed that the determination of the rate of interest had nothing whatsoever to do with savings and investment. Basically he suggested that the rate of interest is the 'price' which equilibrates the desire to hold wealth in the form of cash with the desire to hold wealth in the form of other assets given the available quantity of cash; and that any discrepancy between voluntary savings and investment expenditure will lead to income changes which will have the effect of restoring equilibrium.

The neo-Keynesian theory of the rate of interest incorporates all the essentials of the early versions but does not answer the question of how the present-day type of increases in the general price level (inflation) will affect interest rates, mainly because modern inflation usually implies a simultaneous increase in the general price level and in the quantity of money in circulation. Without knowing in advance the tempo of increases in each of these magnitudes and also the psychological effects which these movements have on the speculative and hoarding (precautionary) demand for cash (i.e. on the liquidity preference function), as well as on the velocity of circulation of money itself, it would seem impossible to draw any firm conclusions on theoretical grounds, other than stating that it would seem unlikely that an increased tempo of price increase would, by itself, lead to a lower long-term rate of interest. It does not seem justified, however, to state that on theoretical grounds the present long-term rate

of interest in South Africa will of necessity show significant further increases in the near future because of the more rapid inflation experienced during the last 18 months to two years.

RESULTS OF STATISTICAL STUDIES

Statistical studies attempting to quantify the relationship between price level changes and changes in long-term rates of interest have been making their appearance overseas since approximately 1960. Unfortunately, no studies of this type appear to have been done for South Africa yet. It would be impractical, within the scope of the present paper, to attempt a comprehensive survey of all the existing empirical evidence on this subject. In order to acquaint readers with the type of studies being done and with the type of conclusions being arrived at two recent studies of this type will, however, be briefly discussed.

William P. Yohe and Dennis S. Karnosky investigated the relationship between yields on securities issued by the private sector and price level changes in the United States for the period 1952-1962² on the basis of the theoretical relationship set out by Irving Fisher, which can be written as follows:

$$1 \quad rn_t = \dot{p}e_t + rr_t$$

$$2 \quad \dot{p}e_t = \sum_{i=0}^n w_i \dot{P}_{t-i}$$

The first equation states that the nominal interest rate (rn) prevailing at time (t) for a particular debt instrument is equal to the annual rate of change of prices ($\dot{p}e$) expected at time t to occur over the life of the instrument plus its 'real' rate of interest (rr). The second equation indicates that the rate of price changes expected at time t for some future period is the weighted sum of actual past price changes (P_{t-i}) where the importance of each past change is reflected in the weight (W_i), and where (n) indicates how many periods in the past are relevant in forming these expectations.

This study, after some further refinements, shows that price level changes in the United States between 1952-1969 have evidently had a prompt and substantial effect on price expectations and on nominal interest rates. In addition, the total effect of price expectations on interest rates appears to have increased greatly since 1960. It is significant that the authors conclude that price level changes, rather than changes in 'real' rates, account for nearly all the variations in nominal rates since 1961. It would also seem that by far the major part of the effect which price changes have on the rate of interest is felt within 24 months of these price changes taking place. This conclusion appears to be in contrast with the results of studies covering earlier periods when it apparently took much longer for price changes to exert their full influence.

Ford and Stark recently investigated the relationship between changes in retail prices, the bond rate and other variables considered to be relevant.³ They use two basic variations of Keynes's liquidity preference

1 I. Fisher, 'Appreciation and Interest' 1896
I. Fisher, 'The rate of Interest', 1907
I. Fisher, 'The theory of Interest', 1930

2 William P. Yohe and Dennis S. Karnosky, 'Interest Rates and Price

Level Changes, 1952-69'; Review of the Federal Reserve Bank of St. Louis, December 1969

3 J. L. Ford and T. Stark, 'Long and Short-term Interest Rates — An Econometric Study,' published in the USA by Augustus M. Kelley, New York, 1969

theory $M = L(Y, R)$ as equations for their statistical tests.⁴ The data are on a quarterly basis for the period 1955-1964. It is found that the liquidity preference theory of the determination of the rate of interest stands up well to empirical testing; but that it is not improved upon by the introduction of growth-of-price variables. It is true, however, that for some versions of the theory such variables are statistically significant and, that for the most part, they have a positive influence on the bond rate. Their overall explanatory effect, however, is virtually zero in all cases.

Although the foregoing survey of empirical evidence is by no means comprehensive, it confirms that the choice of a specific theoretical relationship between increases in the price level and changes in the rate of interest, which is considered appropriate to the actual situation, must of necessity precede empirical testing. Whilst, therefore, empirical testing can assist in confirming an already suspected theoretical relationship between the variables considered, it can hardly give birth to a proven new theoretical relationship.

Partly because of this, already existing empirical work on this question does not assist us very much in determining the likely movement of long-term interest rates in South Africa in the near future. In addition, as we shall attempt to show in the next section, no existing empirical work takes account of certain factors of importance in South Africa at the moment which appear to be very relevant to the relationship between the long-term rate of interest and changes in the price level in our country.

SPECIAL FACTORS CONSIDERED

When considering the various theoretical relationships between interest rates and changes in the price level, it becomes obvious that there are a few special factors operating in the case of South Africa for which no provision seems to have been made in any of the different theoretical models.

The most strategic of these seem to be:

- (a) That, of the various components of saving, i.e. company saving; the current surplus of general government; personal saving; and depreciation allowances, it is only personal saving which is at all sensitive to changes in interest rates where a higher or lower rate of interest accompanying a higher or lower rate of inflation could conceivably influence the volume of saving itself. It is true that both company savings as well as depreciation allowances could conceivably be directly influenced by the rate of inflation, but one may reasonably expect this relationship to be a direct one and not to work via changes in the rate of interest.

The conclusion seems inescapable that, insofar as a more rapid inflation is expected to push up interest rates because of a reluctance amongst

savers to save and invest these savings as a fixed monetary amount at the old rates, this can only take place in South Africa via the element of personal saving which comprises between 25% and 33% of our total gross domestic saving.

- (b) A further significant fact is that personal saving in South Africa is mostly of a contractual nature and is also determined to a very large extent by income tax considerations (e.g. contributions to recognised pension and retirement annuity funds). The author's impression is that for that part of personal saving taking place through contributions to pension funds, annuity funds or life insurance policies, the rate of interest has very little, if any, influence although (as we shall see in the next section) the rate of inflation may eventually prove to be a relevant factor.
- (c) The very interesting study by Homer⁵ indicates that even in pre-biblical times certain sections of the community received specially privileged funds. This phenomenon is also discernible in present-day South Africa where the Government, home owners and the farming community have been placed in a specially privileged position with regard to the attracting of loan funds. This is being done by utilising liquid asset requirements for the banking sector not only as a method of ensuring conservative banking procedures but also as a way of procuring cheap loan funds for the Government. Further methods have been to extend special privileges to building societies on the understanding that they, in their turn, make the bulk of their funds available to bona fide home purchasers as cheaply as possible. In addition, deposit rate control was instituted to ensure that mortgage financing to home owners does not become too expensive and that building societies continue to draw what is considered to be a satisfactory portion of all savings.

These artificial restraints on the free market play of the supply of and demand for loanable funds in South Africa have resulted in our interest rate structure not even nearly reflecting any equilibrium position in the market. It is not at all clear, therefore, whether under these circumstances an adjustment is necessary to accommodate the effect of factors (such as possibly, the high rate of inflation) which may, in an equilibrium position, necessitate a change in the level of interest rates.

What is clear, however, is that a further proliferation of control measures may gradually become necessary if both long- and short-term interest rates are to be maintained at levels which are obviously out of line with market forces for any considerable period of time. This, in turn, may lead to such uncertainty that the business mood and, eventually, economic growth may be detrimentally affected.

4 Where M: The quantity of money;
L: The liquidity preference function;
Y: National income (or gross domestic product);
R: The rate of interest.

Ford and Stark concede that if one accepts the arguments behind Keynes's liquidity preference theory, the equations derived from it

with R as the dependent variable should be linear in logarithms, but they found that using this type of equation made no essential difference from using ordinary linear equations to their overall results.

5 Sidney Homer, 'A History of Interest Rates,' Rutgers University Press, 1963

CONCLUSION

It must be conceded that the foregoing analysis has not proved the suggestion that a significant upward adjustment in long-term interest rates in South Africa is necessary because of our accelerated rates of inflation⁶ if a sufficient volume of saving is to be forthcoming to finance the investment necessary for our continued economic growth. The impression has been gained that the influence of the accelerated rate of inflation on the long-term rate of interest will be in the form of pressure for an upward adjustment but it has not been proven that such an adjustment must of necessity take place, and even if it does, the extent of the adjustment in relation to the actual increase in the rate of inflation has not been indicated with any degree of certainty.

One point which has not been considered so far, however, is the selection by the saver of the appropriate channel into which to direct his savings. It is conceivable, were present high rates of inflation to continue, whether long-term interest rates are adjusted upwards or not (but especially in the latter case), that savers may start to reconsider the most appropriate channels into which to direct their savings and that a gradual change may ensue away from the traditional channels to that of direct investment in assets such as fixed property, merchandise, shares or even gold; i.e. assets where the savings are not coupled to a fixed initial money value. In such a situation it seems very possible that many savers may wish to become borrowers also, e.g. to purchase property financed partly by means of a mortgage bond, and to utilise their saving to repay their borrowing. In any case, it seems fairly certain that this type of development will entail a significant change in our traditional South African type of financial structure handling savings at the moment. In the current economic literature, such a phenomenon is referred to as a change to a new portfolio selection by savers.

It seems obvious that a phenomenon of this type would

result from a gradual structural change in the psychology of savers and would probably only develop fully after a prolonged period of very high (though not necessarily accelerating) rates of inflation, although it seems that signs are apparent of this change already having taken place to some extent in the case of a few more sophisticated savers. It is interesting to note also, that the ultimate effect of such a change may well be to push up long-term interest rates; not because of any direct relationship between the rate of inflation and the long-term rate of interest but because of an increase in the demand for long-term loanable funds in relation to the supply thereof as a result of the changed psychology of savers.

Readers may well be excused, at this stage, if they fail to notice any significance in the fact as to whether a changed psychology of savers is interposed or not between a high rate of inflation and any eventual increase in the long-term rate of interest in South Africa. There are, however, two important differences between these cases.

If such an increase is brought about via a changed psychology of savers it will be a much more gradual process than if the demand and supply of loanable funds were directly influenced by the relative levels of the long-term rate of interest and the rate of inflation. In the first case South Africa will have considerably more time available to bring down the rate of inflation and thereby to prevent a higher level of long-term interest rates developing as an accepted feature of our financial landscape.

A further significant difference is that if such a higher level of long-term rates develops via a changed psychology of savers our traditional financial structure (e.g. pension funds and life insurance companies handling the bulk of net personal saving) may change in ways which can hardly be foreseen at the moment, whilst if the higher rates come about in the alternative manner this traditional financial structure will probably remain largely intact.

⁶ If the present restrictive monetary policy is continued, however, such a development may well prove inevitable because of the sharply increased transactions demand for money reported by most banking institutions.