

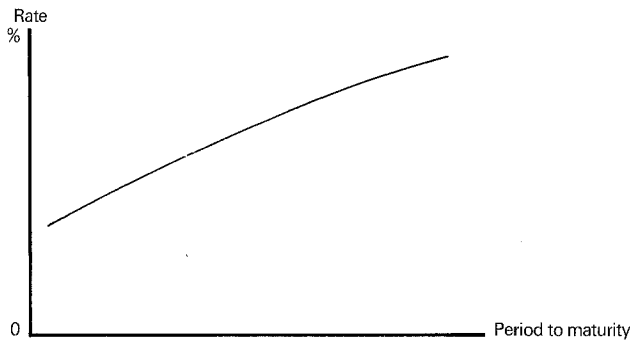
Investment basics – VII

THE STRUCTURE OF INTEREST RATES

The rate of interest is the price of money and is determined at any point in time by the laws of supply and demand. The rate of interest therefore is a function of the demand for and supply of funds for any given period and level of risk.

While the absolute level of interest rates is determined by the demand for and supply of funds, the structure of interest rates reflects the time value of money and the market's expectations concerning the future trend of interest rates. A yield curve is the clearest means of indicating the level and structure of interest rates and Figure 1 below illustrates the "normal" or positive yield curve:

Figure 1



The level or position of the curve reflects the demand for and supply of funds – clearly where $D > S$ the curve would tend to shift upwards and conversely when $S > D$.

The shape of the curve, however, is a more complex matter, being a function of not only the time value of money, but also the market's expectations about the future trend in interest rates, inflationary expectations, etc.

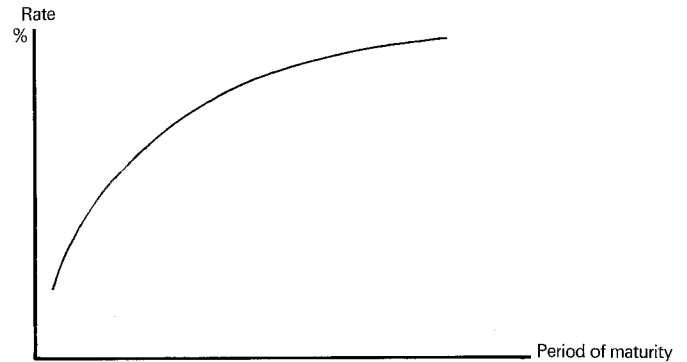
The "time value of money" has nothing to do with inflation. In a world where there is no inflation and interest rates are not expected to move up or down a positively sloping yield curve would persist, reflecting quite simply the premium to be paid on current rather than future consumption – R100 today is more desirable than the same amount of money (in real terms) a year hence and even more so than R100 twenty years down the road. Looking at it from another angle, an investor expects a premium for any loss of liquidity even in a risk and inflation-free world.

As Keynes aptly put it, "the rate of interest at any time, being the reward for parting with liquidity, is a measure of the unwillingness of those who possess money to part with their liquid control of it".

Turning to the structure of interest rates it has already been noted that market expectations play a major role in determining the shape of the curve.

The above graph depicts a steep, positively sloping curve which has been representative of the situation in South Africa in 1980 and is usually indicative of market expectations of an increase in interest rates. The wide differential between short and long-term rates indicates

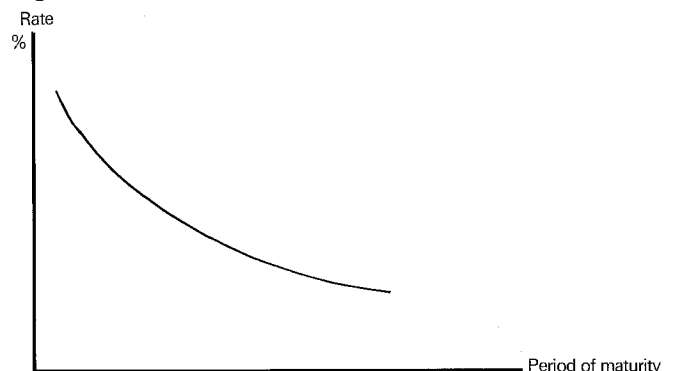
Figure 2



that investors are prepared to accept (relatively) low rates of interest on short-term deposits rather than accept significantly higher rates on longer term money. This is symptomatic of a market experiencing a high level of liquidity but where investors anticipate that this will be short-lived and that interest rates will rise as the demand for funds starts to exceed the supply. In addition expectations of high and continuing rates of inflation may make investors wary of committing funds for long periods at fixed rates below the expected rate of inflation. Investors have consequently been prepared to keep their funds liquid, albeit at low rates of interest, in order to avoid the risk of severe capital loss which may occur on longer term investments when interest rates rise.

The converse situation occurs when interest rates are expected to decline:

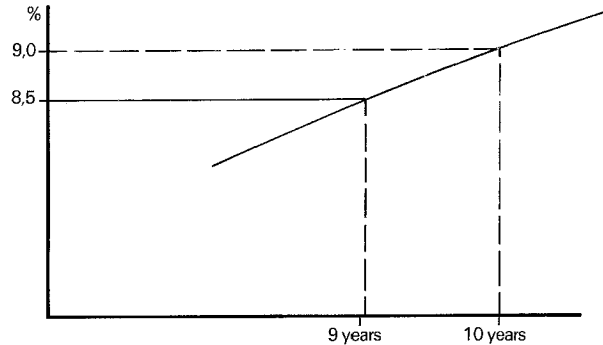
Figure 3



The above inverted or negatively sloping yield curve illustrates the situation which has prevailed in the UK and many other overseas markets during 1980. Tight monetary policies have pushed short-term rates above long-term ones but the markets have expected this to be a temporary or relatively short-lived phenomenon. Borrowers have been prepared to pay high rates for short-term funds but have not been prepared to lock themselves into paying these high rates for long periods – similarly investors will accept a lower rate for long-term investments if they expect rates to decline and revert to a more normal situation.

In a relatively stable environment an investor might expect to face a fairly gently sloping positive yield curve which would show little movement over a period of years. To the extent considered prudent one could then invest in longer term securities and "ride the yield curve" with little risk. What is meant by riding the yield curve may be illustrated as follows:

Figure 4

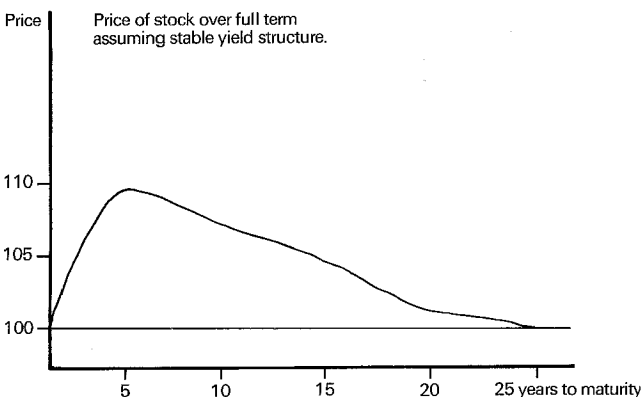


In the above illustration a ten-year stock yields 9,0% while a nine-year stock yields 8,5%. Thus a purchase today of a ten-year stock at par would give a yield to redemption of 9,0% but in a year's time, *provided that the yield curve did not move*, the stock could be sold at a yield of 8,5% which would result in a capital profit of 3,1%. The overall return therefore over the one-year period held would be 12,1%, made up of 9,0% income yield and 3,1% capital appreciation. This total yield is generally referred to as the performance yield.

Another way of looking at the question of riding the yield curve is to consider the price of a stock rather than its yield to redemption. In SA, stocks are quoted in terms of yield to redemption whereas in many markets overseas stocks are quoted in terms of price.

Even assuming a stable yield curve the price of a stock will vary over its life as the following table and graph illustrate:

Life years	Stable yield structure	Price of 10% stock
1	5,50	104,3
3	6,50	109,4
5	7,65	109,6
7	8,30	108,9
10	8,90	107,2
15	9,50	104,0
20	9,85	101,3
25	10,00	100,0

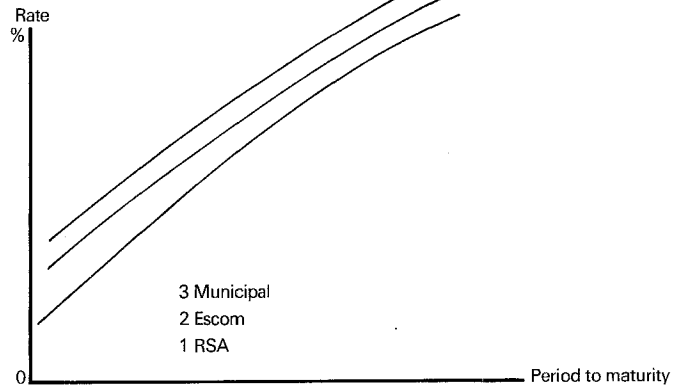


On the basis of the stable yield structure as shown above it can be seen that the price of a stock with a coupon of 10% will rise from par, peaking when it has approximately five years to redemption and thereafter declining until redemption date when its price will again revert to par.

Unfortunately in the real world the yield curve is not stable but shifts up and down and also changes its shape. Investment strategy must therefore be aimed at attempting to either maximise profits or minimise losses that might be caused by movements in the yield curve.

Reference has been made thus far to the yield curve as though there was only one such curve indicating the structure of interest rates. There are in practice several such curves representing the yield structures for different securities. For example the rates on Government (RSA) securities will always be lower than those on say, Escom securities (Figure 5 below) which will in turn be below those on lower status municipal stock.

Figure 5



Opportunities exist for investors to take advantage of changes in the relative positions of yield curves. Market anomalies occur from time to time as the gaps between stocks widen and narrow in certain years and investors can buy or sell those securities that move out of line. In adverse market conditions when money is tight, differentials between prime and secondary stocks tend to widen while during periods of falling rates and high liquidity these differentials narrow. It should further be noted that even for a category of stocks such as Escom, there is no single yield curve. In any year there may be several different stocks maturing yet the redemption yields on each may differ due to varying coupon rates and quantities in issue.

An investor in fixed interest securities has to take cognizance of a host of variables when formulating investment strategy. The structure of interest rates which he is faced with is influenced by a wide range of factors reflecting the market's view of the future, a view determined by expectations of current and future monetary and fiscal policy, inflationary expectations and all other economic variables which influence financial markets. The investor should therefore consider not only the current structure of interest rates and future shifts in the yield curve but also the changes in differentials between different classes of securities.

In addition an investor in fixed interest securities has to take due regard of his liability structure when deciding to what extent he can invest in short and long-dated securities. At the one extreme there are the discount

houses whose liabilities are exclusively short-term and for whom highly liquid shorter dated investments are essential, while at the other are pension funds and life insurance companies whose liabilities are usually long-term and who can therefore accept longer term and less

liquid investments. The “time” axis of the above graphs need only be as little as 12 months or could be as great as 25 years but whichever category of investor one falls into the same basic principles apply when formulating strategy for fixed interest investment.