

Investment basics – VI

Interest rates, yield curves and the valuation of ordinary shares

The importance of interest rates to the valuation of ordinary shares can best be illustrated by an example such as the following:

$$PV = \sum_{t=0}^n \frac{d_t}{(1+i)^t}$$

where: PV = present value
 i = interest or discount rate
 d = dividend for the period t

Present value is an essential feature of the fundamental approach to security valuation. Thus, if the summed present value of expected future dividends exceeds the ruling market price of an ordinary share, the share is to be regarded as being undervalued and, therefore, worth buying, and conversely where the summed present value is less than the ruling market price.

The equation given above is an abbreviated statement which can be expressed more fully as follows:

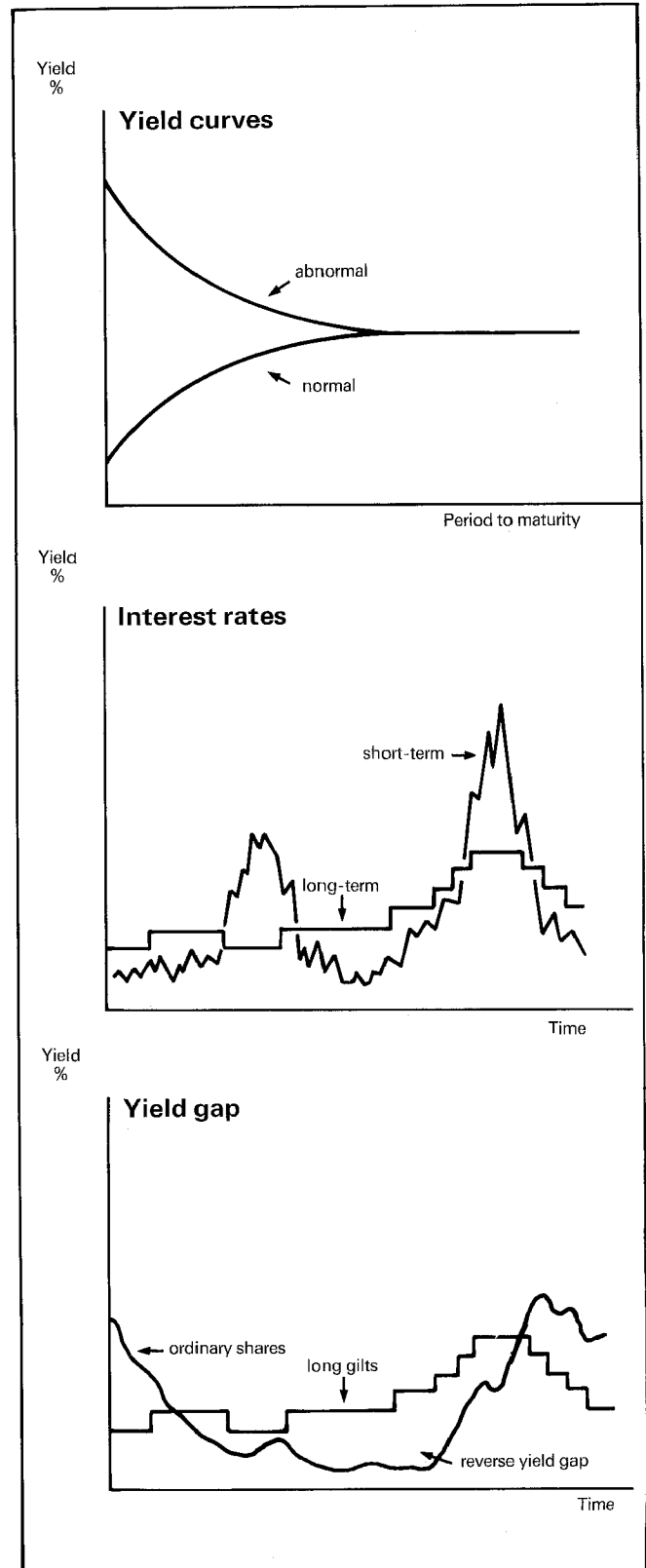
$$PV = \frac{d_1}{(1+i)} + \frac{d_2}{(1+i)^2} + \frac{d_3}{(1+i)^3} + \dots + \frac{d_n}{(1+i)^n}$$

Of course, in the real world $d_1, d_2, etc.$ are not facts that are susceptible to objective calculation. They have to be estimated depending very much on what the individual analyst considers most likely having regard to his subjective view of the future performance of the company concerned. This, however, does not get away from the central importance of i in the methodology. Clearly, the greater i is, the less will PV be, and vice versa. All other things being equal, therefore, a rise in interest rates will reduce PV estimates while a fall in interest rates will make ordinary shares appear to be cheaper than they were before.

The present value approach is based on the simple understanding that, in a world of clearly definable interest rates, an amount of money due to be received at a future date is capable of being translated into current money terms. R100 if invested at the ruling rate of interest will accumulate to R110 in one year if the rate of interest is 10%, which is another way of saying that R110 in one year's time is worth R100 today.

It follows from what has just been said that interest rates are important to the valuation of ordinary shares because they represent the opportunity cost of equity investment. An investor contemplating buying an ordinary share listed on The Johannesburg Stock Exchange needs to know what he is giving up by not investing in a fixed interest repository that avoids the risk of income fluctuation or loss, if his decision is to be rational. *Ceteris paribus*, the risk of an ordinary share must be greater than the risk of a fixed interest security because an ordinary share represents the rights of an owner while the fixed interest security represents the entitlement of a creditor. Both in the case of payments of income and capital, the claim of a creditor is of higher rank in law than the claim of an owner and this is of the greatest importance in the valuation process.

It is the consideration of risk, of course, which determines the "normal" structure of investment returns. Thus, it is



usual to find long-term gilt edged securities offering lower yields than semi-gilts, and semi-gilts lower yields than industrial debentures of comparable maturity. The fact that running yields on ordinary shares (long-term securities in that they have no fixed date of redemption) may be lower than debenture yields is explained entirely by the possibilities of income growth that ordinary shares offer. In the absence of such growth and in a world where risk alone was the criterion of discrimination, the "normal" structure of investment returns would apply. A reverse yield gap (i.e. a gap reflecting a lower average flat yield on ordinary shares compared to the ruling average redemption yield on long-term gilts) should not, therefore, be regarded as "normal" as it can exist only because ordinary share investors are prepared to sacrifice some short-term income benefit for the benefit of a greater, albeit less certain, income later.

Strictly, the return on an ordinary share should not be measured by its ruling dividend yield, i.e. by the percentage of an historical annualised dividend payment to current market price. The true return on an ordinary share can only be measured by a comparison of all expected future dividends and market price, the return being that rate of interest or discount (see the equation given at the beginning of this article) which reduces the present value of expected future dividends to equality with the share's current market value. A return greater than the opportunity cost of the investment being considered would be encouraging to a purchase of the share, a return less than its opportunity cost would be the opposite.

But what rate of discount currently ruling should be regarded as the valid opportunity cost? This is a difficult question to answer and forces us into a comparison between short-term and long-term interest rates. Because short-term interest rates are normally lower than long-term interest rates, their use in the discounting process here described would result in more favourable estimates of ordinary share values than would the use of long-term interest rates. On the other hand, short-term interest rates sometimes exceed long-term interest rates and when they do, exercise a powerful attraction for the available cash resources of the community. Viewed from the view-point of society as a whole, ordinary shares undoubtedly are long-term securities and thus strictly should be evaluated in terms of ruling long-term interest rates. But for the individual investor, ordinary shares are not held in perpetuity. Indeed, they may be purchased with an intention to short period commitment and this makes short-term interest rates a factor of great importance in equity evaluation.

There are, thus, two dimensions to the type of change in interest rates that affect the valuation of ordinary shares. An upward or downward shift in the structure of interest rates has one effect, a change in short-term interest rates relative to long-term interest rates has another. Both of these are important and the dynamics of their inter-relationship has to be understood and applied in the process of investment evaluation.