

Popular myths: Gilt switching

Synopsis

Current methods of evaluating switches are inadequate to the extent of being misleading. Many make oversimplified assumptions regarding capital gains while all ignore the timing of the coupon payments and the accumulated interest from their reinvestment. If these factors are taken into account so that the switch is correctly evaluated the distinctions made between the various methods are unnecessary. Not surprisingly, the calculations required to evaluate a switch accurately also identify the stocks that will yield maximum returns and are all that are needed to construct optimum portfolios.

In gilt markets a switch is an exchange between two stocks that is intended to be reversed at a profit after a limited period. Various methods of identifying switching opportunities are applied. The main approaches in SA are:

1 YIELD ANOMALIES

Here deviations from the yield curve are used to pinpoint "cheap" and "expensive" stocks. Gilts with yields to redemption that lie above the curve are regarded as bargains while those with yields below are considered dear. The underlying assumption is that the deviations will only be temporary so that if a switch out of an expensive stock into a cheap stock is made it will be reversible at a profit. Of course, this is not necessarily true as some stocks always remain at a premium or discount. Other disadvantages are that no attempt is made to quantify the likely profit and coupon payments together with the interests from their reinvestment are ignored. Also, switches between stocks with yields which lie on the yield curve but which may ultimately yield higher profits are not considered.

2 YIELD DIFFERENTIALS

This approach exploits fluctuations in the difference in yields to redemption between pairs of stocks. When the yield differential is high the opening of the switch from the lower to the higher yielding stock is signalled. It is assumed that for the switch to be closed at a profit this differential must remain the same or, better still, narrow. Again no attempt is made to quantify profits and a heavy emphasis is placed on the size of the initial differential, rather than the extent to which it will change, as an indicator of potential capital gains. As with yield anomalies no attention is given to coupon payments or their timing.

3 PRICE RATIOS

The disadvantage the above yield signals have in not quantifying the capital gains can be avoided by using instead the present and expected future ratios of the clean prices of pairs of stocks. If a ratio is forecasted to increase by 10% a capital profit of this amount is indicated. Clean prices are used as total prices would produce distortions due to either accumulated interest or ex-dividend effects. Unfortunately clean prices still completely ignore the influence of coupon payments so that again the total profit from the switch is not actually indicated.

4 POLICY SWITCHES

Policy switches are identified by comparing the likely return from each stock over a fixed period of time known as the horizon period. Switches are then made from stocks with low expected horizon returns to those with high expected horizon returns. These expected horizon returns are calculated by taking into account the total purchase price, the expected total selling price at the end of the horizon period and the coupon payments during the period. Thus, if a switch is made from a stock with an expected horizon return of 10% per annum to one with an expected horizon return of 15%, the likely gain is 5%.

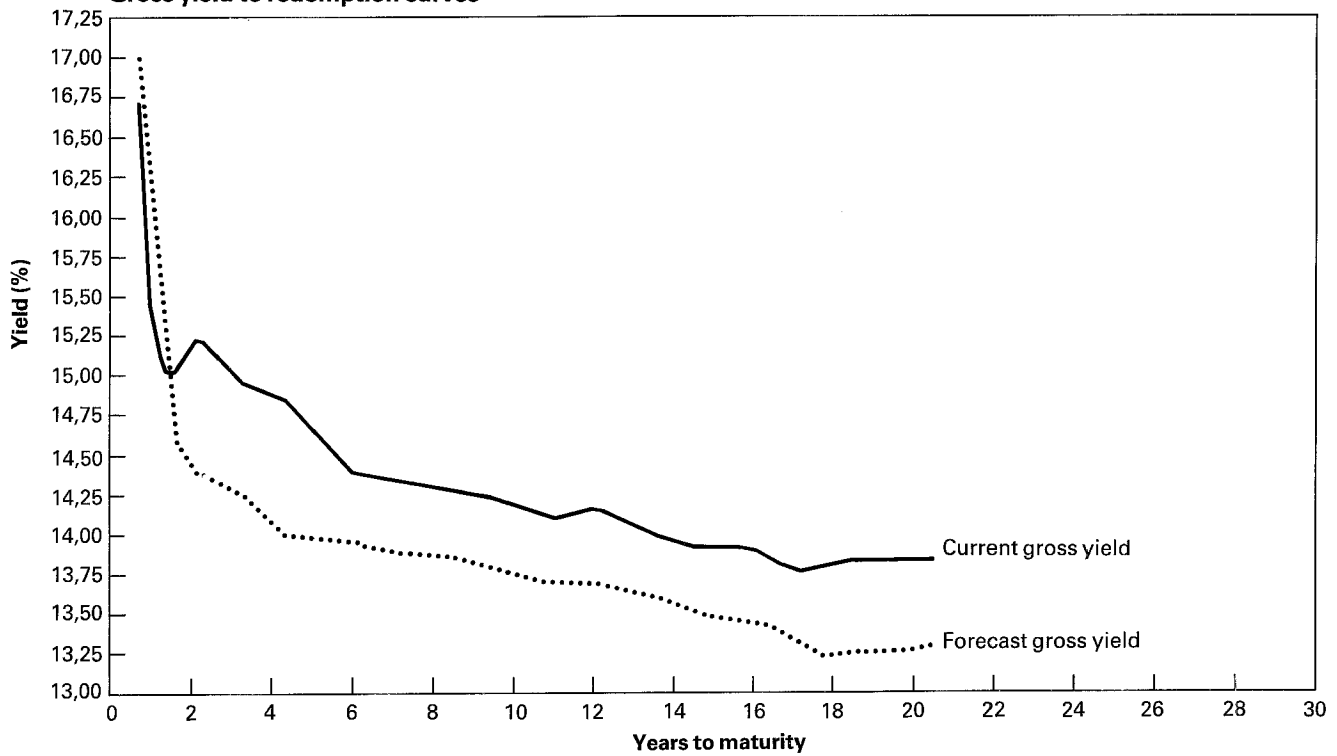
The only factor which is ignored in this approach is the timing of the coupon payments during the horizon period. This affects the interest that can be earned by reinvesting the coupon payment and should not be omitted.

From the above descriptions it is readily apparent that each of the above switching methods involves exactly the same variables. However, the last approach (the policy switch) quantifies more of the factors that can affect the profitability of a switch than any of the others. It, therefore, presents the more rational basis of choice and must be recommended above the other techniques. Nevertheless, we know that it, too, is not perfect as it does not take into account the interest that can be earned by reinvesting the coupon payments. If this final factor is also included a completely fair method of comparison would result.

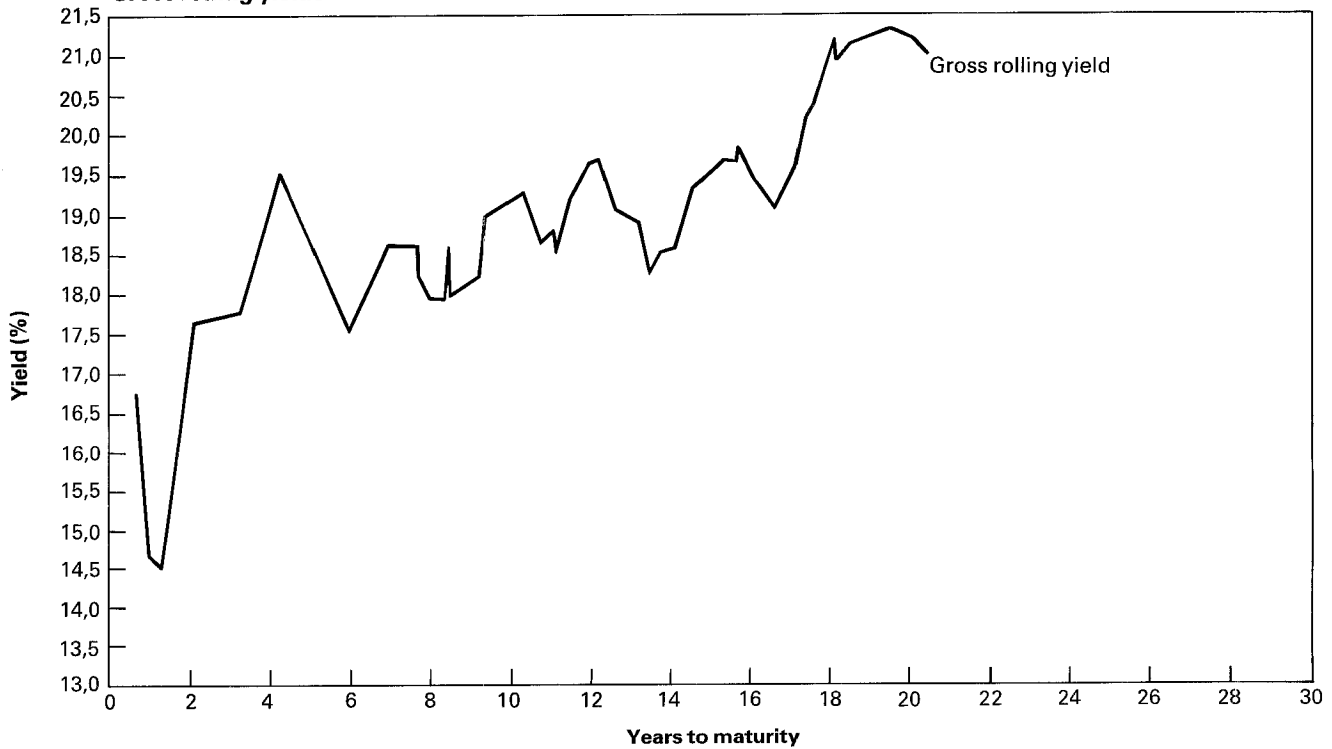
Such a comparison is offered by the expected rolling yield. The concept of the rolling yield was developed to assist in determining the optimum maturities from which to construct a portfolio. It, therefore, also provides the best method of choosing a switch. As with the policy switch, the expected rolling yield takes into account the purchase price, the expected selling price and the coupon payments but, in addition, includes an estimate of the accumulated interest from their reinvestment. In order to calculate the expected rolling yield for a particular stock it is, therefore, necessary to know the purchase yield to redemption at the beginning of the horizon period, the reinvestment rate expected at the date of each coupon payment and the anticipated sale yield to redemption at the end of the horizon period.

When forecasting the sale yield to redemption, it is practical to include an appropriate discount to ensure marketability for the less popular stocks so that the expected rolling yields are realistic. Plotting these expected rolling yields for the various maturities of the stocks in a particular category will provide the expected rolling yield curve for the specified horizon period. The expected rolling yield curves for the different categories then provide an easy method of identifying the best switches. The maximum point on any curve identifies the stock with the highest expected rolling yield and this is the best stock to hold or switch into over the horizon period. Conversely, the best stock to sell or switch from is the one with the lowest expected rolling yield and this will correspond to the minimum point on a curve. For any switch the difference between the expected rolling yields of the two stocks involved provides an exact and convenient estimate of the potential profit. Tax effects on expected rolling yields depend on the tax category of the purchaser but will not be considered here.

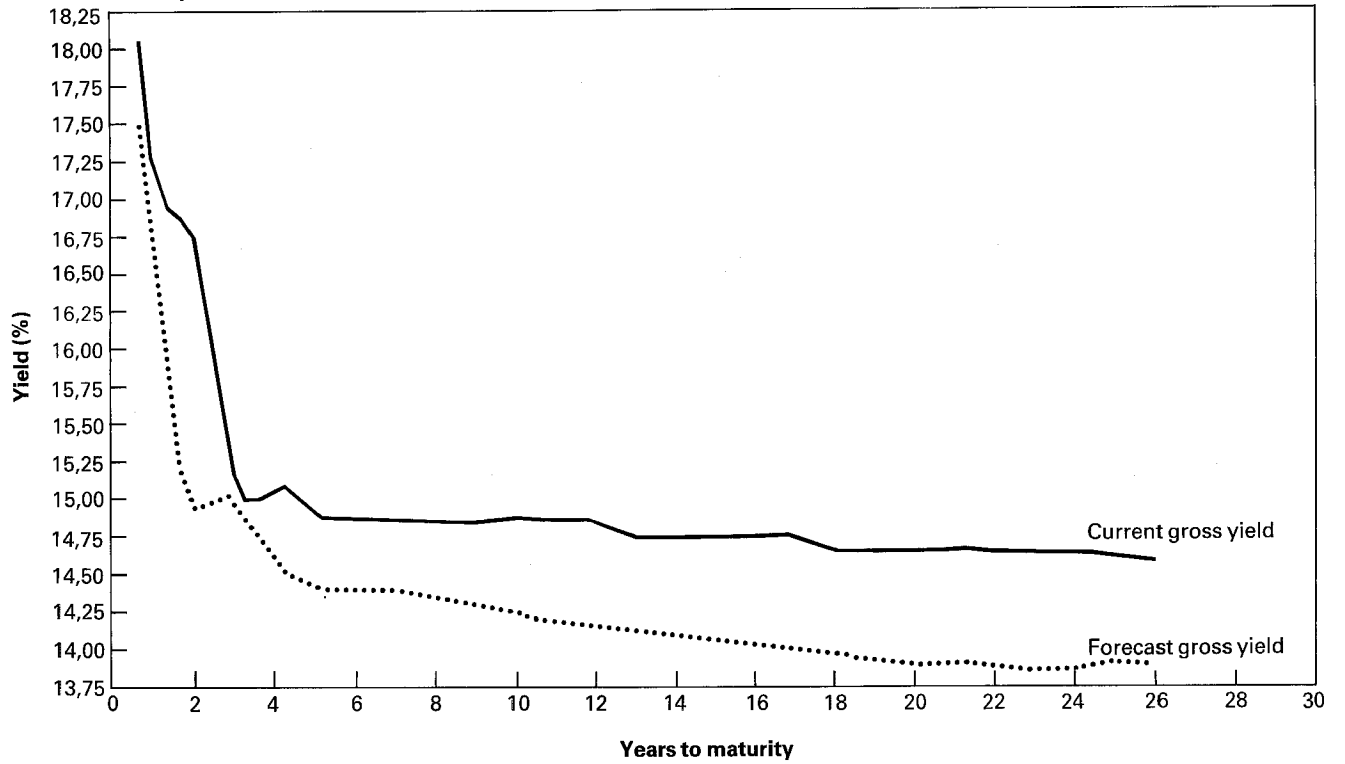
Republic of South Africa
Horizon period: 7 months 17 February 1984 to 4 September 1984
Gross yield to redemption curves



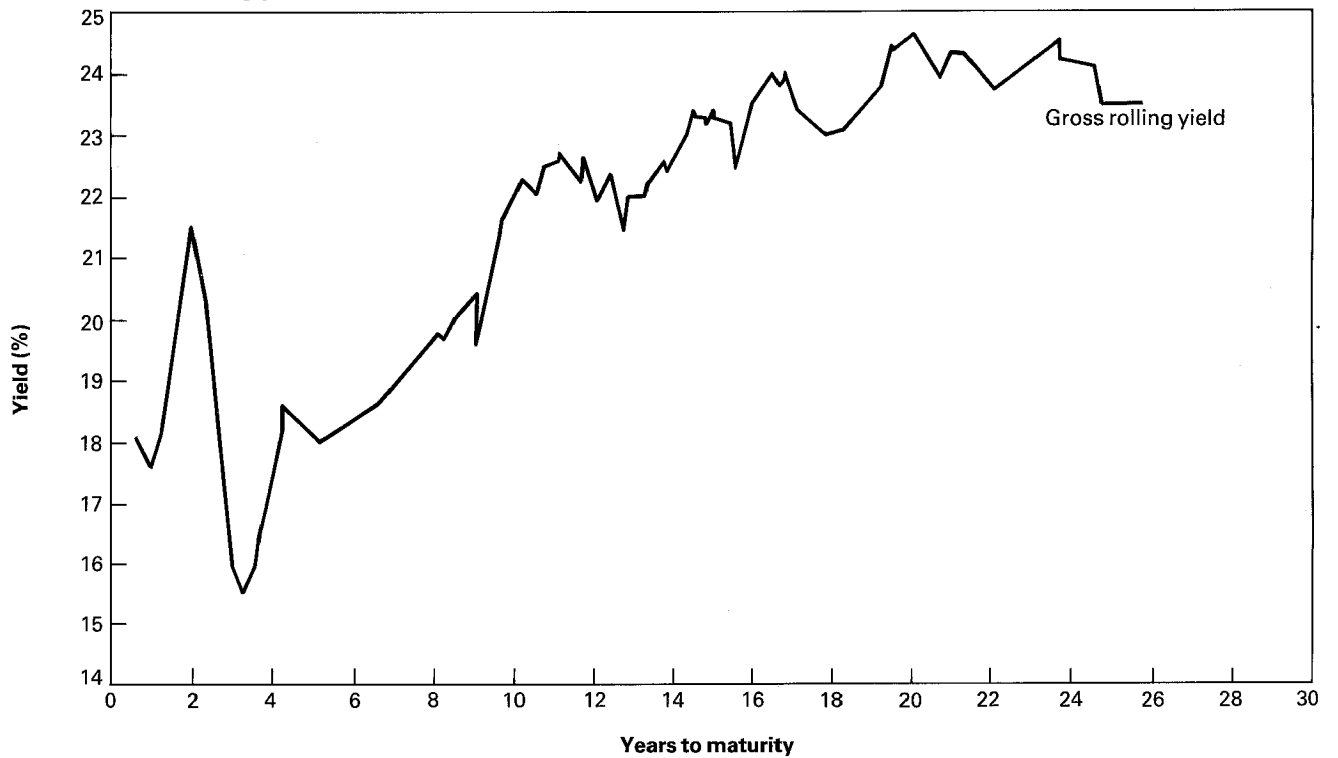
Gross rolling yields



Escom
Horizon period: 7 months 17 February 1984 to 4 September 1984
Gross yield to redemption curves



Gross rolling yields



convenient estimate of the potential profit. Tax effects on expected rolling yields depend on the tax category of the purchaser but will not be considered here.

The graphs below show gross (ie before tax) expected rolling yield curves for R.S.A. and Escom stocks over a 7 month horizon period. Above these curves the corresponding purchase and forecasted selling yield curves used to calculate the expected rolling yields are also given. The rates at which the coupon payments have been assumed to be reinvested differ according to the timing of the payment and are based on expected call rates. (It can be assumed that coupon payments are reinvested in a stock. In this case coupon payments from the reinvested coupons must be taken into account and the calculations become more complex). Aside from reinvested income, coupon levels also affect capital gains or losses and so contribute significantly to the jagged shape of the expected rolling yield curves.

A glance at the two expected rolling yield curves shows that the highest returns (around 24%) are likely to be earned from Escom stocks with maturities of between 19 and 25 years and these are the best stocks to switch into or hold over the period. The lowest points (less than 16%) on both curves indicate that, in particular, some of the shorter dated R.S.A.s and Escoms should be switched out of or sold. Obviously, these are not the only switches that need be considered. Any switch which leads to an improvement in expected rolling yield is a step in the right direction.

In order to quantify the switches visually identified from the expected rolling yield curves more accurately, the actual stocks and returns used to construct the graphs are needed. The relevant points for our example are shown below:

Highest returns				Gross expected rolling yield
Stock description	Maturity date	Years to maturity	Type coupon %	% per annum
Escom	11,300	31/05/2003	19,283	23,809
Escom	10,750	31/05/2003	19,283	23,883
Escom	9,700	31/08/2003	19,535	24,466
Escom	10,250	31/08/2003	19,535	24,374
Escom	9,150	01/03/2004	20,036	24,618
Escom	8,650	01/03/2004	20,036	24,717
Escom	10,950	01/11/2004	20,706	23,975
Escom	9,550	01/02/2005	20,958	24,271
Escom	9,050	01/02/2005	20,958	24,356
Escom	9,550	01/06/2005	21,287	24,303
Escom	9,050	01/06/2005	21,287	24,386
Escom	12,950	01/04/2006	22,119	23,756
Escom	10,000	01/11/2007	23,704	24,550
Escom	13,200	01/11/2007	23,704	24,245
Escom	12,000	01/09/2008	24,539	24,136

Lowest returns				Gross expected rolling yield
Stock description	Maturity date	Years to maturity	Type coupon %	% per annum
R.S.A.	6,500	01/02/1985	0,958	14,679
R.S.A.	7,000	01/02/1985	0,958	14,682
R.S.A.	15,000	15/04/1985	1,158	14,579
R.S.A.	5,500	15/06/1985	1,325	14,482
Escom	6,125	28/02/1987	3,031	15,943
Escom	8,100	01/06/1987	3,285	15,471

These figures show the best switch would be from the R.S.A. 5,5% 1985 to the Escom 8,65% 2004 yielding an expected improvement of 10,235% (24,717%–14,482%) per annum over the 7 month period. Even a switch from say the Escom 12,950% 2006 to the Escom 9,150% 2004 would increase returns by 0,862% (24,618%–23,756%) which is a worthwhile improvement even for amounts of R1 million.

Finally, a note of caution. An optimum switch under one interest rate scenario may perform badly under another. It is, therefore, imprudent to carry out switches without first investigating the sensitivity of the expected rolling yields to changes in the forecasted selling yields and reinvestment rates. In this way, switches that perform well even under pessimistic assumptions can be identified and the downside risk reduced.