Education Series

Bond Valuation: Yield

The fact that the coupon payments and the final redemption payment are fixed is one of the main attractions of a typical bond from an investor's point of view. Hence, apart from supply and demand, bond pricing also takes into account coupon payments.

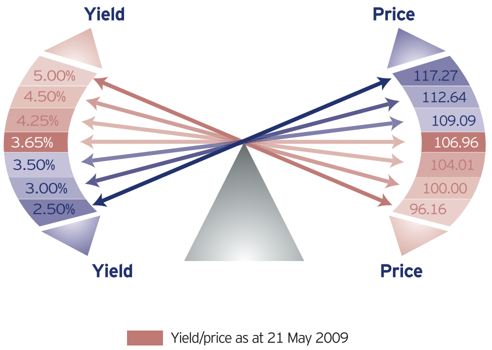
Relationship between bond price and yield

The combined effect of the coupon income and price change is measured by "yield", which can also be regarded as the return of a bond. The relationship between bond price and yield is an inverse one.

This point is demonstrated in Figure 1. We show a newly issued UK 4 1/2% Treasury Gilt 2019 that has a 4 1/2% coupon, which is higher than the yield on other gilts with a similar maturity in the market. Higher yield attracts demand and the bond price is driven up to £106.96. This explains why the gilt price is higher than its £100 redemption price. If 10-year gilt yields were to fall generally, then the price of the 4 1/2% 2019 gilt would rise further. As the cost of investing in the 4 1/2% 2019 gilt becomes greater while the coupon income is fixed, the yield of the bond falls.

In other words, a fall in yields to 3% means a price increase to £112.64 of the said gilt. Conversely, if yields rose to 4.5%, then the price of the said gilt would fall to £100. The reason is that the coupon payments guaranteed by the gilt would then be in line with the market yield: both would be 4.5%.

Figure 1. UK 10-year gilt price and yield
UK 4 1/2% Treasury Gilt 2019, maturing 7 March 2019



Source: UK Debt Management Office (www.dmo.gov.uk). Data as at 21 May 2009.

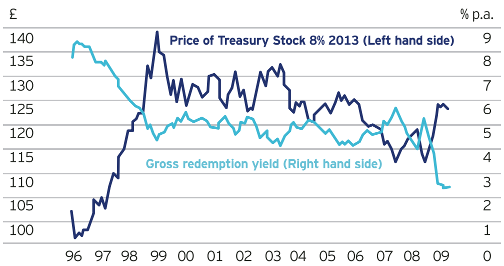
Bond Valuation

The Treasury Gilt 4 1/2% 2019 we have looked at so far was first issued only recently – in 2008. The relationship between price and yield over a longer period of time can be demonstrated by looking at another gilt – UK Treasury Stock 8% 2013, as shown in Figure 2. This was first issued on 1 April 1993 and will be redeemed on 27 September 2013. So, at the time of its issue it was a gilt with just over 20 years to maturity. Since then, two main developments have affected the price of that Treasury 8% 2013 gilt: peers comparison and interest rates.

First, it is now closer to its final redemption date – it now has less than six years until maturity. So it will now be compared to other gilts in the market with around six years remaining until maturity.

Second, yields on all gilts, and the coupon rates on gilts that have been issued more recently, have fallen since 1993. The 8% fixed coupon of this gilt is much higher than that on more recently issued gilts. So far in 2009, for example, all of the conventional gilts have had coupons between 2 1/2% and 4 1/2%. That means the 8% coupon payments on the Treasury 8% 2013 gilt, which are still guaranteed, are much higher than the coupons offered on newly-issued gilts. Reflecting this, the gilt's price on 30 April 2009 was £123.16, well above the £100 at which it will be redeemed by the government on 27 September 2013.[1] In this example, the gilt's price has been driven up by the fact that there has been a general decline in interest rates in the bond market since the bond was issued.

Figure 2. Price and yield of a gilt



Source: Reuters Ecowin. Data as at 21 May 2009.

[1] Source: UK Debt Management Office, 21 May 2009.

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