

How does interest rate affect the price PDF转换可能丢失图片或格式
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https://www.100test.com/kao_ti2020/500/2021_2022_Howdoesint_c85_500417.htm There is a relationship between bond prices and interest rates, and the maturity of a bond has an impact on its price sensitivity to interest rates. This article examines the relationship. A dollar today is worth more than a dollar in the future, simply because a dollar today can be deposited into a bank account to earn interest. If one-year interest rates are 5%, the \$1 received today and deposited into the bank account would be worth \$1.05 in a year's time. \$1 today is also known as the present value of the \$1.05 expected in a year, given the one-year interest rates of 5%. The relationship between present value, future value and interest rates is given by the simple discounting formula :- $\text{Present Value} = \frac{\text{sum of future cashflows}}{(1 + \text{interest rate})}$ In our earlier example, the present value of \$1 was therefore obtained from: $= \$1.05 / (1 + 5\%) = \1.00 A bond holder receives a stream of interest, or coupons for owning the bond and gets back his principal on maturity of the bond. In order to receive these streams of future cashflows, the prospective bond holder pays a price to the issuer of the bond. The price paid upfront is the present value of all the future cash-flows of coupons and principal on maturity, discounted at the appropriate interest rate, which is also known as the yield to maturity (YTM) of the bond. The YTM is the current market interest rates, which could differ from the fixed interest or coupon rate paid by each bond. The YTM is determined by (among other factors) inflation, demand and supply

of funds and Central Bank policy. On the other hand, the bonds coupon or fixed interest rate is determined at the launch of the bond and stays fixed during the bonds lifetime. The following examples will illustrate how changes in YTM or market interest rates affect bond prices. Let's calculate the price of a two-year bond, which pays annual coupons of 8%, if the current interest rates or YTM is 5%. Note that this bond pays a higher coupon than the prevailing interest rates of 5%, which therefore makes the bond attractive to investors. Applying the present value formula to obtain the price of the bond:-

$$\text{Present Value} = \left[\$8 / (1 + 5\%) \right] + \left[\$8 + \$100 / (1 + 5\%)^2 \right] = \$105.58$$

A very important point to note is the inverse relationship between yield (denominator) and price. A rise in interest rates will reduce the price, or present value of all the future cashflows, of the bond. Conversely, a fall in interest rates will increase the price, or present value of all future cashflows of the bond. For instance, if the interest rates or yields rise to 6%, the new price of the bond will now only be:-

$$\text{Present Value} = \left[\$8 / (1 + 6\%) \right] + \left[\$8 + \$100 / (1 + 6\%)^2 \right] = \$103.67$$

Shorter maturity bonds are typically less price-sensitive to interest rate changes than long maturity bonds. In general, the price sensitivity of a two-year fixed income bond is twice that of a one-year fixed income bond. Likewise, a 10-year fixed income bond will be about 10 times more sensitive to interest rates than a one-year fixed income bond. The longer the maturity, the higher the price sensitivity of the bond to interest rate changes. A fixed income bond investor has to understand these two concepts. For example, if an economy is undergoing a severe recession, there is a greater chance

for the Central Bank to reduce interest rates. If interest rates fall, bond prices will rise, as shown by our earlier examples. The prices of longer maturity fixed income bonds will rise more than shorter maturity bonds. Hence, a fixed income investor who expects market interest rates to fall should invest in longer maturity fixed income bonds to maximise price appreciation. On the other hand, if the economy has been booming and inflation is high, there is a greater chance that the Central Bank will raise interest rates. If interest rates do rise, bond prices will fall, according to the inverse relationship between bond price and interest rates. The fixed income investor should hold only shorter maturity bonds to avoid heavier price falls from rising interest rates. When these shorter maturity bonds mature, the fixed income investor can reinvest the proceeds in new higher coupon bonds, assuming that interest rates do rise as expected. A good grasp of these two concepts enables a fixed income investor to tailor the maturity profile of his portfolio to his expectations of future interest rates. If the investor expects interest rates to fall, he should invest in longer maturity bonds which have higher price sensitivity to interest rates in order to maximise his returns. On the other hand, if the investor expects interest rates to rise, he should keep his bond portfolio short in maturity to lessen price falls in his portfolio.

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