

金融英语阅读：利率如何影响债券的价格？PDF转换可能丢失图片或格式，建议阅读原文

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How does interest rate affect the price of bonds? 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 rate 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 cashflows 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 rate, 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 bond's 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 rate or YTM is 5%. Note that this bond pays a higher coupon than the prevailing interest rate of 5%, which therefore makes the bond attractive to investors. Applying the present value formula to obtain the price of the bond: Present Value = $\left[\frac{\$8}{(1.05)} \right] + \left[\frac{\$8 + \$100}{(1.05)^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 rate or yields rise to 6%, the new price of the bond will now only be: Present Value = $\left[\frac{\$8}{(1.06)} \right] + \left[\frac{\$8 + \$100}{(1.06)^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. (The writer is Associate Director, Portfolio Management of Morgan Grenfell (Asia) Limited. This column has the support of the Investment Management Association of Singapore and the Stock Exchange of Singapore.) 中文：利率如

何影响债券的价格？债券价格与利率的关系，以及债券期限的长短在利率变动时对价格构成了什么样的影响呢？本文探讨两者的关系。现在手头上的1元比将来同样的1元更值钱，那是因为这手头上的1元可存入银行赚取利息。如果1年的利率是5%，那么一年后这1元将值1.05元。以年利率5%计算，手头上的1元是一年后的1.05元的现值。现值、未来值和利率间的关系可以用以下这个简单的贴现方程式表达：现值 = 未来会收现金 / (1 + 利率) 根据上述例子，现值1元是根据这个方程式计算而得的： $= \$1.05 / (1 + 5\%) = \1.00 债券持有人会定期收到利息以及在到期时取回相等于债券面值的金额。要在将来定期收到利息，债券投资者首先得付出一笔钱给债券发行人。这笔钱就是投资者将来会收到的利息和到期时会取回的本金的现值，而所用的贴现利率就叫做“到期利率”。到期利率是市场现行的利率，与债券的票面利率可能有差距。影响到期利率的因素包括通货膨胀率、资金需求与供应和中央银行的货币政策。而债券的票面利率在发行时已定下，并在有限期内通常维持不变。以下的例子将解释到期利率或市场利率变动如何影响债券价格。债券是两年期，年利率是8%，到期利率是5%。这批债券所付的利息高于市场，对投资者来说很具吸引力。根据以上方程式可算出债券的价格： $[\$8 / (1 + 5\%)] + [\$8 + \$100 / (1 + 5\%)^2] = \105.58 假设利率升高至6%，那么债券价格将是： $[\$8 / (1 + 6\%)] + [\$8 + \$100 / (1 + 6\%)^2] = \103.67 利率与价格之间的反比关系是值得注意的一点。利率升高会使债券价格下跌，相反的，利率下跌债券价格就会上升。另外，期限较短的债券通常对利率变动的反应不会那么大，期限较长的，在利率出现变化时，价格的

变动会较大。一般来说，两年期债券的价格变动会相等于一年期的两倍；同样的，10年期债券的反应会是一年期的10倍。上述两个概念对债券投资者来说是非常重要的。例如，经济正处于严重衰退时，中央银行很可能会调低利率，在这种情形下，上述的例子显示债券价格将会升高。而长期债券的价格升幅会高过短期债券，因此预期利率会调低的债券投资者应该投资于较长期的债券，以便取得较高的收益。另一方面，如果经济蓬勃发展，通货膨胀率也高，中央银行调高利率的可能性很高。如果利率真的上升，债券价格就会往下落，这时候投资者应该持有较短期的债券，减低债券价格滑落所带来的冲击。在这批短期债券到期时，假设利率如预期般升高，投资者可将取回的现金投资于票面利率较高的债券。掌握这两个概念，将能让投资者根据自己对利率走势的看法决定投资组合的组成债券。如果认为利率会跌，那应投资于对利率较为敏感的长期债券，以争取更高的收益。相反地，预测利率会起的话，就应确保投资组合中的债券是短期的，减少价格下跌所造成的冲击。100Test 下载频道开通，各类考试题目直接下载。详细请访问 www.100test.com