4.4: Bond Prices and Interest Rates

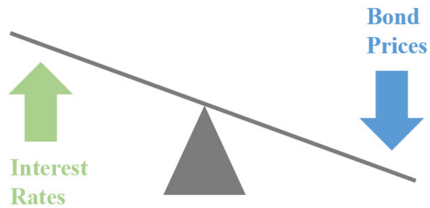

Figure 4.4.1: Relationship between bond pricing and interest rates

As market rates of interest rise, bond prices will fall. Alternatively as market rates of interest fall, bond prices will rise. **Bond prices and the market rate of interest are inversely related**. This is because the cash flow stream you receive from the bond is fixed. As market rates of interest go up, you are discounting that fixed cash flow stream back at a higher rate which makes it less valuable. As market rates of interest go down, you are discounting that fixed cash flow stream back at a lower rate which makes it more valuable. The market rate of interest is the rate of interest available on similar risk securities purchased today. Also, we can think of the Yield-to-Maturity (more on this in a minute) as the market rate of interest. Keep in mind when we say interest rates went up or down, we are talking about the YTM, NOT the coupon rate. The coupon rate does not change.

This relationship is stronger for bonds with a longer time until maturity. Therefore, a 20-year bond will have a higher premium than a similar 3-year bond after interest rates have declined. The rationale for this relates again to the time value of money. A bond with a greater time to maturity will have a longer fixed cash flow stream which means it will be affected to a greater degree by changes in interest rates. As a side note, this is a little bit of a simplification. The sensitivity to interest rates is technically affected by a combination of time to maturity and the coupon rate (duration), but that is beyond the scope of this class. For our purposes, it will suffice to know that the greater the time to maturity, the more sensitive the bond is to changes in interest rates.

This relationship is also stronger for bonds with lower coupon rates. Everything else being equal, the lower the coupon rate of a bond the more sensitive it will be (in terms of percentage changes in the bond price) to interest rate changes. Therefore, a 15-year 4% coupon bond will see a greater percentage price increase if interest rates decline than a similar 15-year 10% coupon bond.