Chapter 7
Bonds and Their Valuation

BONDS AND BOND VALUATION

1. Key features of a bond
   a. par, face, or maturity value
   b. coupon rate
   c. maturity
   d. yield to maturity (also called required return and market rate)

2. Bond Values
   a. Generally, the value of an asset is the present value of the benefits expected from the asset; what are the benefits expected from bond ownership?
   b. Determine the value of a 10-year, $1,000 par value bond with a 10 percent annual coupon when YRM (or required rate of return) is 10 percent.

\[ Bond \ value = P_B = INT \left[ \frac{1 - (1 + i)^{-n}}{i} \right] + M (1 + i)^{-n} \]

   c. What would happen to the value of the above bond if YTM dropped to 7 percent? Rose to 13 percent?
   d. What is the relationship between bond prices and YTM?
   e. What if the bond pays semiannual interest payments, how does your valuation change?

3. What is the relationship between time to maturity and bond values?
   a. Calculate the price of a 2-year, $1,000 par value bond with a 10 percent annual coupon when the YTM is 10%; what if the required rate of return falls to 7%?
   b. Calculate the price of a 20-year, $1,000 par value bond with a 10 percent annual coupon when the YTM is 10%; what if the required rate of return falls to 7%?
   c. Compare a and b above with the answers for 2 b and c. Do you see a relationship?

4. Interest Rate Risk and reinvestment rate risk
   a. Which has more interest rate (price) risk, a 2-year or a 20-year bond?
   b. Which has more reinvestment rate risk?

5. Yield to Maturity
   a. Calculate YTM for a 10-year, 10 percent annual coupon bond, $1,000 face value bond that sells for $887?

\[ AYTM = INT + \left( \frac{M - P_B}{n} \right) \]

\[ \frac{2(P_B) + M}{3} \]

   b. What if the bond sells for $1,134.20?
   c. What is the relationship between a bond’s coupon rate and YTM?

6. Total return, current yield, and capital gains yield
   a. current yield = \( \frac{INT}{P_B} \)
   b. capital gains yield = \( \frac{P_{B_h} - P_{B_0}}{P_{B_0}} \)
   c. total return = current yield + capital gains yield
MORE ON BOND FEATURES
1. The indenture
2. Registered bonds versus bearer bonds
3. Security
4. Seniority
5. Sinking fund
6. Call provision
7. Relationship between features and the riskiness of the bond issue

DEFAULT RISK AND BOND RATINGS

SOME DIFFERENT TYPES OF BONDS
2. Zero coupon bonds
3. Floating-rate bonds
4. Other types of bonds (income, convertible, putable)