Chapter 4
Bond Markets

Computations

1. A bond with a $1,000 par value has an 8 percent annual coupon rate. It will mature in 4 years, and annual coupon payments are made at the end of each year. Present annual yields on similar bonds are 6 percent. What should be the current price?
   [1069.3]

2. A bond with a ten percent coupon rate bond pays interest semi-annually. Par value is $1,000. The bond has three years to maturity. The investors' required rate of return is 12 percent. What is the present value of the bond?
   [950.83]

3. Zero coupon bonds with a par value of $1,000,000 have a maturity of 10 years, and a required rate of return of 9 percent. What is the current price?
   [422,410.81]

4. Assume that the price of a $1,000 zero coupon bond with five years to maturity is $567 when the required rate of return is 12 percent. If the required rate of return suddenly changes to 15 percent, what is the price elasticity of the bond?
   [-0.492]

5. Assume a bond with a $1,000 par value and an 11 percent coupon rate, two years remaining to maturity, and a 10 percent yield to maturity. The duration of this bond is ___ years. The modified duration of this bond is ___ percent.
   [1.90 and 1.53]

True/False Problems

If the coupon rate of a bond is above the investor's required rate of return, the price of the bond should be below its par value. T

If the level of inflation is expected to decrease, there will be upward pressure on interest rates and on the required rate of return on bonds. F

Bond price elasticity is the percentage change in bond prices divided by the percentage change in the required rate of return. T

As interest rates increase, prices of short-term bonds will decline by a greater degree than prices on long-term bonds. F

The credit risk premium tends to be larger for bonds that have longer terms to maturity. T

Multiple Choice Problems

1. If the coupon rate equals the required rate of return, the price of the bond
a. should be above its par value.
b. should be below its par value.
c. **should be equal to its par value.**
d. is negligible.

2. Which of the following formulas best describes the value of a bond?
a. $$\text{PV of bond} = \frac{Par}{(1+k)^1} + \frac{C}{(1+k)^2} + \ldots + \frac{C}{(1+k)^n}$$
b. $$\text{PV of bond} = \frac{Par}{(1+k)^1} + \frac{C}{(1+k)^1} + \ldots + \frac{C}{(1+k)^n}$$
c. $$\text{PV of bond} = \frac{C}{(1+k)^1} + \frac{C}{(1+k)^2} + \ldots + \frac{C+Par}{(1+k)^n}$$
d. $$\text{PV of bond} = \frac{C+Par}{(1+k)^1} + \frac{C}{(1+k)^2} + \ldots + \frac{C}{(1+k)^n}$$
e. none of the above

3. The value of ____-risk securities will be relatively ____.
a. high; high
b. **high; low**
c. low; low
d. none of the above

4. When holding other factors constant, increased borrowing by the Treasury can result in a _____ required return and therefore _____ prices on existing bonds.
a. higher; lower
b. higher; higher
c. lower; higher
d. lower; lower

5. For a given par value of a bond, the higher the investor's required rate of return is above the coupon rate, the
a. greater is the premium on the price.
b. **greater is the discount on the price.**
c. smaller is the premium on the price.
d. smaller is the discount on the price.

6. As interest rates increase, long-term bond prices
a. increase by a greater degree than short-term bond prices.
b. increase by an equal degree as short-term bond prices.

c. **decrease by a greater degree than short-term bond prices.**
d. decrease by an equal degree as short-term bond prices.
e. decrease by a smaller degree than short-term bond prices.

7. The prices of bonds with ____ are most sensitive to interest rate movements.
a. high coupon payments
b. **zero coupon payments**
c. small coupon payments
d. none of the above (The size of the coupon payment does not affect sensitivity of bond prices to interest rate movements.)

8. The prices of ____-coupon and ____ maturities are most sensitive to changes in the required rate of return.
a. low; short
b. **low; long**
c. high; short
d. high; long

9. Consider a coupon bond that sold at par value two years ago. If interest rates are much lower now than when this bond was issued, the coupon rate of that bond will likely be ____ the prevailing interest rates, and the present value of the bonds will be ____ its par value.
a. **above; above**
b. above; below
c. below; below
d. below; above

10. The relationship reflecting the actual response of a bond's price to a change in bond yields is
a. concave.
b. **convex.**
c. linear.
d. quadratic.