CHAPTER 4
BONDS ANND THEIR VALUATION

Bond value--semiannual payment

1. You intend to purchase a 10-year, $1,000 face value bond that pays interest of $60 every 6 months. If your nominal annual required rate of return is 10 percent with semiannual compounding, how much should you be willing to pay for this bond?

N = 20 I/Y = 5 PV = -1124.62 PMT = 60 FV = 1000

Bond value--semiannual payment

2. Assume that you wish to purchase a 20-year bond that has a maturity value of $1,000 and makes semiannual interest payments of $40. If you require a 10 percent nominal yield to maturity on this investment, what is the maximum price you should be willing to pay for the bond?

N = 40 I/Y = 5 PV = -828.41 PMT = 40 FV = 1000

Bond value--semiannual payment

3. A bond that matures in 12 years has a 9 percent semiannual coupon (i.e., the bond pays a $45 coupon every six months) and a face value of $1,000. The bond has a nominal yield to maturity of 8 percent. What is the price of the bond today?

N = 24 I/Y = 4 PV = -1076.23 PMT = 45 FV = 1000

Bond value--semiannual payment

4. A corporate bond with a $1,000 face value pays a $50 coupon every six months. The bond will mature in 10 years, and has a nominal yield to maturity of 9 percent. What is the price of the bond?

N = 20 I/Y = 4.5 PV = -1065.04 PMT = 50 FV = 1000

Yield to maturity--semiannual bond

5. A corporate bond has a face value of $1,000, and pays a $50 coupon every six months (that is, the bond has a 10 percent semiannual coupon). The bond matures in 12 years and sells at a price of $1,080. What is the bond’s nominal yield to maturity?

N = 24 I/Y = 4.45*2 = 8.90 PV = -1080 PMT = 50 FV = 1000

Yield to maturity--semiannual bond

6. You just purchased a $1,000 par value, 9-year, 7 percent annual coupon bond that pays interest on a semiannual basis. The bond sells for $920. What is the bond's nominal yield to maturity?

N = 18 I/Y = 4.14*2 = 8.28 PV = -920 PMT = 35 FV = 1000

Current yield

7. Consider a $1,000 par value bond with a 7 percent annual coupon. The bond pays interest annually. There are 9 years remaining until maturity. What is the current yield on the bond assuming that the required return on the bond is 10 percent?

N = 9 I/Y = 10 PV = -827.23 PMT = 70 FV = 1000

CY = 70/827.23 = 8.46

Current yield

8. A 12-year bond pays an annual coupon of 8.5 percent. The bond has a yield to maturity of 9.5 percent and a par value of $1,000. What is the bond's current yield?

N = 12 I/Y = 9.5 PV = -930.16 PMT = 85 FV = 1000

CY = 85/930.16 = 9.14%

Current yield and yield to maturity

9. A bond matures in 12 years and pays an 8 percent semi-annual coupon. The bond has a face value of $1,000 and currently sells for $985. What is the bond's current yield and yield to maturity?

N = 24 I/Y = 4.1 * 2 = 8.2% PV = -985 PMT = 40 FV = 1000

CY = 80/985 = 8.12%

YTC--semiannual bond

10. A corporate bond matures in 10 years. The bond has an 10 percent semiannual coupon and a par value of $1,000. The bond is callable in five years at a call price of $1,050. The price of the bond today is $1,075. What is the bond's yield to call?

N = 10 I/Y = 4.46*2 = 8.92% PV = -1075 PMT = 50 FV = 1050

YTC--semiannual bond

11. A corporate bond matures in 8 years. The bond has an 6 percent semiannual coupon and a par value of $1,000. The bond is callable in four years at a call price of $1,050. The price of the bond today is $975. What is the bond's yield to call?

N = 8 I/Y = 3.91*2 = 7.82% PV = -975 PMT = 30 FV = 1050

YTM and YTC--semiannual bond

12. A corporate bond matures in 14 years. The bond has an 8 percent semiannual coupon and a par value of $1,000. The bond is callable in five years at a call price of $1,050. The price of the bond today is $1,075. What are the bond's yield to maturity and yield to call?

N = 28 I/Y = 3.57*2 = 7.14 PV = -1075 PMT = 40 FV = 1000

N = 10 I/Y = 3.52*2 = 7.04 PV = -1075 PMT = 40 FV = 1050