



Subject: Fixed Income Products

Chapter: Unit 2

Category: Practice questions

1. The coupon rate per period is 4%. There are three years to maturity, there are six evenly spaced semiannual periods. If the market discount rate is 3% per semiannual period. Find the price of the bond per 100 of par value.

2. Calculate the yields-to-maturity for a bond with coupon rate 3.5% per period and number of periods to maturity is 4. The price of the bond is 103.75

3. An investor is considering the following six annual coupon payment government bonds:

Bond	Coupon Rate	Time-to-Maturity	Yield-to-Maturity
A	0%	2 years	5.00%
B	5%	2 years	5.00%
C	8%	2 years	5.00%
D	0%	4 years	5.00%
E	5%	4 years	5.00%
F	8%	4 years	5.00%

1. Based on the relationships between bond prices and bond characteristics, which bond will go up in price the most on a percentage basis if all yields go down from 5.00% to 4.90%?

2. Based on the relationships between the bond prices and bond characteristics, which bond will go down in price the least on a percentage basis if all yields go up from 5.00% to 5.10%?

4. A 6% German corporate bond is priced for settlement on 18 June 2015. The bond makes semiannual coupon payments on 19 March and 19 September of each year and matures on 19 September 2026. The corporate bond uses the 30/360 day-count convention for accrued interest. Calculate the full price, the accrued interest, and the flat price per EUR100 of par value for annual yield-to-maturity being 5.80%.

5. An analyst needs to assign a value to an illiquid four-year, 4.5% annual coupon payment corporate bond. The analyst identifies two corporate bonds that have similar credit quality: One is a three-year, 5.50% annual coupon payment bond priced at 107.500 per 100 of par value, and the other is a five-year, 4.50% annual coupon payment bond priced at 104.750 per 100 of par value. Using matrix pricing, the estimated price of the illiquid bond per 100 of par value is closest to:

- A. 103.895
- B. 104.991
- C. 106.125

6. An analyst observes these reported statistics for two bonds.

	Bond A	Bond B
Annual Coupon Rate	8.00%	12.00%
Coupon Payment Frequency	Semiannually	Quarterly
Years to Maturity	5 Years	5 Years
Price (per 100 of par value)	90	105
Current Yield	8.889%	11.429%
Yield-to-Maturity	10.630%	10.696%

1. Confirm the calculation of the two yield measures for the two bonds.
2. The analyst believes that Bond B has a little more risk than Bond A. How much additional compensation, in terms of a higher yield-to-maturity, does a buyer of Bond B receive for bearing this risk compared with Bond A?

7. A five-year FRN pays three-month Libor plus 0.75% on a quarterly basis. Currently, three-month Libor is 1.10%. The price of the floater is 95.50 per 100 of par value, a discount below par value. Here $N = 20$. Assume the 30/360 day-count convention and evenly spaced periods. Calculate the discount margin of the bond.

8. Suppose that a money market investor observes quoted rates on the following four 180-day money market instruments:

Money market instrument	Quotation basis	Assumed number of days in the year	Quoted rate
A	Discount rate	360	4.33%
B	Add-on rate	360	4.35%

Calculate the bond equivalent yield for each instrument.

9. Calculate the par rates for years given that the spot rates on government bonds are 5.263% for one year, 5.616% for two years, 6.359% for three years, and 7.008% for four years. These are effective annual rates.

10. A 6% annual coupon corporate bond with two years remaining to maturity is trading at a price of 100.125. The two-year, 4% annual payment government benchmark bond is trading at a price of 100.750. The one-year and two-year government spot rates are 2.10% and 3.635%, respectively, stated as effective annual rates.

1. Calculate the G-spread, the spread between the yields-to-maturity on the corporate bond and the government bond having the same maturity.
2. Demonstrate that the Z-spread is 234.22 bps.

11. State a few differences in yield measures between the money market and the bond market.

12. Consider a 10-year, semiannual-pay 6% bond trading at 102 on January 1, 2014. The bond is callable according to the following schedule: Callable at 102 on or after January 1, 2019. Callable at 100 on or after January 1, 2022. Calculate the bond's YTM, yield-to-first call, yield-to-first par call, and yield-to-worst.

13. What is the annual yield for a bond with a stated YTM of 10%:

1. When the periodicity of the bond is 2 (pays semiannually)?
2. When the periodicity of the bond is 4 (pays quarterly)?

14. If the current 1-year spot rate is 2%, the 1-year forward rate one year from today (1y1y) is 3%, and the 1-year forward rate two years from today (2y1y) is 4%, what is the 3-year spot rate?



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