Bonds - exercises

Basic terms

- Characteristics of bonds – bond indenture, types of bonds, risks associated with bonds, zero-coupon bonds, type of trading and system of quoting (clean x dirty price).

Exercise 1

Assume that your company has issued a 4% coupon, 30-year maturity bond with face value of 1,000 USD paying annual coupon payments.

- What would be the value (or price) of the bond if the market interest rate for similar bonds (meaning with similar amount of risk) is 4%?
- What would be the value (or price) of the bond if the market interest rate for similar bonds (meaning with similar amount of risk) is 6%?
- What would be the value (or price) of the bond if the market interest rate for similar bonds (meaning with similar amount of risk) is 2%?
- What is the value of YTM if you succeed to sell the bonds for 880 USD and the market interest rate is 5%?

Exercise 2

Calculate duration and modified duration of a bond characterized by following bond indenture: face value = 1,000 USD, coupon rate = 8%, market interest rate = 4% and time to maturity = 5 years.

Exercise 3

Describe the impact of time to maturity and of coupon rate on the interest rate risk.

Exercise 4

Assume that your company has issued a 0% coupon, 5-year maturity bond with face value of 1,000 USD.

- What would be the value (or price) of the bond if the market interest rate for similar bonds (meaning with similar amount of risk) is 12%?

Exercise 5

How does a dirty price differ from a clean price of a bond? What is accrued interest? Calculate the dirty price when the clean price is 1,020 USD, FV equals 1,000 USD, coupon rate is 7.5% (annual basis) and 243 days has passed since the last coupon payment.