

Homework — Bonds and the Price of Debt

Optional. Worked solutions are on the website

Practice problems

7.1

1. Explain in three sentences why the face value of a bond is not the same thing as its price.
2. A Treasury bill with face value KSh 100,000 and one year to maturity is bought for KSh 88,500. What return does the holder earn if they hold it to maturity?
3. A pension fund is choosing between an infrastructure bond yielding 13.5% tax-free and a corporate bond yielding 16% taxed at 30%. Which delivers more after tax? Name one non-tax consideration that might still favour the other.

7.2

1. A 6-year bond with a 9% coupon trades at 88.50. Without calculating precisely, state whether the market's required yield is above or below 9%, and explain how you know.
2. Price a 3-year bond with an 11% coupon paid semi-annually, at a required yield of 13% per annum. Show the periodic coupon, periodic yield, and number of periods.
3. Explain in four sentences why an investor would pay 108 for a bond that repays only 100 at maturity.

7.3

1. A 5-year bond with an 11% coupon trades at 95.20. By trial, find its yield to maturity to the nearest half percent.
2. An investor holds a 10-year bond bought at par with a 13% coupon. Yields fall to 10%. Compute the new price and the gain. Then compute the present value, at 10%, of the bond's 3-point excess coupon over the ten years, and compare it with the gain.
3. Two 5-year bonds from the same issuer trade side by side: one pays a 10% coupon and is quoted at 93.00; the other pays 16% and is quoted at 113.00. By trial, find each yield to maturity to the nearest half percent. Which is the better buy at these prices, and why is the higher price not the answer?

7.4

1. Two bonds from the same issuer have identical maturities. One is secured on property and yields 15%; the other is unsecured and yields 18%. Explain the difference, and say which component of expected loss differs.
2. A bond's spread widens from 300 to 700 basis points while government yields are unchanged. What has happened, and what would you look at first?

3. Explain why a bond that trades only a few times a month may yield more than an otherwise identical bond that trades daily, and say whether this extra yield is compensation for default risk.

7.5

1. Explain in four sentences why the 12-year bond falls further than the 3-year bond, referring to both the coupon shortfall and the discounting of principal.
2. An insurance company expects to pay claims averaging 4 years out. It currently holds mostly 15-year bonds. Describe the risk it is running and what it should do.
3. A fund manager expects the central bank to cut rates sharply over the next year. What should she do to the maturity profile of her portfolio, and what is the risk if she is wrong?