Excercises

1. You are considering a US Zero Coupon Bond:

the price your bankers is offering you is 98,5

the bond is maturing in 250 days

Calculate the return on the bond

1. You kept the bond for a while and you are now considering selling the bond. The interest rates have not changed and now the bond is maturing in 150 days.

Calculate the price at which you should be able to sell the bond

1. You are buying a corporate coupon bond paying a coupon of 3 euros every six months on the 1st of July and the 1st of January every year. The repayment is set at 100 euro. The Bond will be repayed on December 2021. Today is the 1st of November so the last coupon was paid 121 days ago and the next coupon will be paid in 61 days.

Calculate the price (dirty and clean) of the bond considering that the Yield to Maturity of the bond is 7% per annum.

1. The corporate bond you just analysed is rated bbb by Standard and Poor. Your investment banker just gave you this update on spreads

Rating maturity spread

Bb 2 years 150

Bb 3 years 200

Bb 5 years 220

You decided to buy also a treasury zero coupon bond maturity December 2021. How much would you expect to pay for it?

1. You have a portfolio of 3 bonds

Bond A with a duration of 3 years and present value of 500 euros

Bond B with a duration of 5 years and present value of 400 euros

Bond C with a duration on 20 years and present value of 400 euros

Calculate the duration of your portfolio

At the moment the zero coupon yield curve is

3% for the 3 years

3% for 5 years

4% for 7 years

5% for 9 years

6% for 10 years

6.5% for the 20 years

Interest rates move up and the entire curve increases by 0,5%

What happens to your portfolio?

Calculate the value of the portfolio after the interest rate increase use both the duration formula and the value of the single bond approach

1. You have won a ticket to receive forever 1000 euro per month. You can sell the ticket and would like to know the price you could sell it for. At the moment interest rates are at 1% per annum. Calculate the value of your ticket
2. You are buying a perpetual bond and you can invest 10,000 euro. The interest rate is equal to 1% per annum. The bond is paying annually. How much should the bond pay you every year?
3. The spot rate curve id the following

Spot 0,1 2%

spot0,2 2%

spot 0,3 3%

spot0,4 3%

spot0,5 4%

calculate the forward rates f0,1 f1,2 f2,3 f3,4 f 4,5 f3,5