

Examination in Financial Management (5077)

Summer Term 2010

Examiner: Prof. Dr. Alfred Luhmer

Examinee:

Student Number:

This examination contains 9 problems on 7 pages. Please check that you have got the complete set.

Please enter your answers in the space immediately below each question. Only answers given there will be graded.

Admissible aids: Pocket calculator, language dictionary

Useful formulas:

The present value of a series of n equal payments a due at the end of each period at a discount rate r (per period) is: $PV = \frac{a}{r} \left(1 - \frac{1}{(1+r)^n}\right)$.

The two solutions of the quadratic equation $ax^2 + bx + c = 0$ are:

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

1	2	3	4	5	6	7	8	9	Σ	Grade
/20	/8	/15	/12	/8	/22	/10	/15	/10		

Problem 1:

- a) Determine the yield to maturity of a zero bond sold at \$300 with face value \$500 to be repaid after 10 years. (5 points)
- b) At what market price would this zero bond trade 5 years later, if the market interest rate has remained unchanged? (5 points)
- c) What annual rate of return would an investor have earned who bought the bond at the issuing date and sold it 5 years after at a price of \$400? (5 points)
- d) Assume the market interest rate is 10%. What would be the time to maturity of a zero bond with face value \$500 and issuing price of \$300? (5 points)

Problem 2: An interest-only bond with face value \$10,000, annual coupon of 6% and two years to maturity is available at a price of \$11,000. Determine the yield to maturity. (Do not use the trial-and-error method). (8 points)

Problem 3: Kangoo Motors is offering free credit on a new \$20,000 car when you pay down \$1,000 and then \$600 at the end of each of the following 36 months. Ostrich cars next door offers the same car for \$19,000 cash. At which **yearly** interest rate would you be indifferent between the two offers?

(Use trial and error method, show your calculations.) (15 points)

Problem 4: On 15th of March you purchased a bond at a quoted price of \$1,038.80, the bond has a 7% coupon rate paid annually on July 1st. The face value is \$1,000. (12 points)

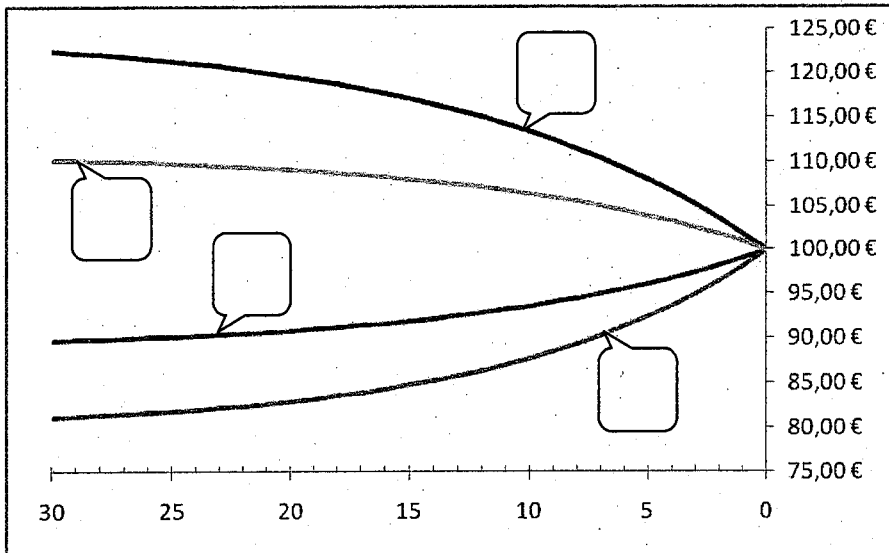
a) How much will you have to pay for it?

b) What is the current yield of the bond?

c) Assume the yield to maturity is 5.2%, constant over time. What is the capital gains yield for the year to come?

d) Which quoted price do you expect in one year?

Problem 5: The following figure shows the value of two bonds as a function of time to maturity. Curve **A** shows the value of a bond with 8% coupon rate for YTM = 10%, curve **B** shows the value of the same bond for YTM = 9%, curve **C** shows the value of a bond with coupon rate 10% for YTM = 8% and curve **D** represents the value of the same bond when YTM = 9%. Fill in the respective labels. (8 points)



Be careful, don't guess at random! False guesses will cost points!

(Total points for this problem will not become negative, however.)

Problem 6: Grindwell Corp. is considering a four-year project to improve production efficiency. Buying a new CNC machine for € 720,000 is estimated to result in € 215,000 in annual pretax cost savings. The machine is to be depreciated straight-line over five years to a salvage value of € 50,000. The machine also requires an initial investment in a tools inventory of € 20,000. If the income tax rate is 25% and the discount rate is 16% p.a. before tax (i.e. 12% after 25% tax), should Grindwell buy and install the machine? (22 pts)

- a) Determine the influence of the project on EBIT, tax bill, and net income for the five years of the machine's useful life.

Cost savings:

Depreciation:

Δ EBIT:

Tax:

Δ NI: