



EXAM

- Course:** BE 316 Valuation
- Date:** 7 March 2017
- Time:** 09.00 – 13.00
- Number of pages:** 3
- Number of exercises:** 6
- Exam aids:** Textbook: “Investment Valuation” by Aswath Damodaran (the students are allowed to write translations of words and concepts, and to correct errors in formulas in the textbook)
- Calculator with empty memory (no communication)
- Dictionary
- General information:** All questions are to be answered. You may answer the exam in English or Norwegian.
-

Exercise 1 (20%)

Elan Bakeries Inc. is considering investing in a new production unit to launch a new type of chocolate cake. The investment cost is \$300,000, which will be depreciated over five years using straight-line depreciation. At the end of 5 years, the production unit is expected to be sold for \$30,000 (before tax). Estimated sales revenue for the new chocolate cake is given in the table below:

	Year				
	1	2	3	4	5
Sales revenue	150 000	240 000	450 000	300 000	240 000

There will be no need for investment in net working capital for this project. Variable costs are estimated to be 30% of sales revenue and fixed costs are \$30,000 per year. The company faces a 20% corporate tax rate. Elan Bakeries uses a 9% discount rate for its investments.

Compute the expected free cash flow for each of the next five years from this project. What is the net present value of this project? Does it create shareholder value? Should Elan Bakeries undertake this project?

Exercise 2 (15%)

Environ Systems is a firm that specializes in cleaning environmental damage (waste disposal) and specialty chemicals. The firm has been traded for only 2 years and gets all of its revenue in the United States. You have been asked to estimate a cost of equity for the firm and have collected the following information:

The average regression beta across waste disposal firms is 1.34 and the average market debt to equity ratio for these firms is 12%; the average regression beta for chemical firms is 1.15 and the average market debt to equity ratio is 25%. The corporate tax rate is 40%.

Environ Systems' book value of equity is \$ 500 million but the market value of equity is \$ 2 billion. The book (and market) value of debt is \$ 500 million.

Estimate the bottom-up levered beta for Environ Systems, assuming that 80% of its value comes from chemicals and 20% from environmental clean-up.

Exercise 3 (15%)

GenTech Inc., a biotechnology firm, had a beta of 1.70 in 2015. It had no debt outstanding at the end of that year. Assume that the risk premium is 5.5 percent.

- a) Estimate the cost of equity for GenTech if the Treasury bond rate is 6.4%.
- b) What effect will a decrease in long-term bond rates to 5.3% have on the firm's cost of equity?

Exercise 4 (15%)

Silverline Inc. reported net income of \$770 million in 2013 after interest-expenses of \$320 million. Its corporate tax rate was 36%. It reported depreciation of \$960 million that year, and capital spending (=capital expenditure) was \$1,200 million. This firm also had \$4,000 million in debt outstanding on the books, rated AA, carrying a yield to maturity of 8%, and trading at par. The beta of the stock was 1.05, and there were 200 million shares outstanding (trading at \$60 per share), with a book value of \$5,000 million. Silverline's working capital requirements were negligible. The Treasury bond rate was 7%, and the risk premium was 5.5%.

- a) Estimate the free cash flow to the firm in 2013.
- b) Estimate the value of the firm at the end of 2013 assuming that the long-term growth rate is equal to 6.5%.
- c) Based on the FCFE approach used in question b) estimate the value of the equity and the value per share at the end of 2013.



Exercise 5 (15%)

MiniTel Inc. is a company that operates in two businesses – telecomm equipment and cable. You are attempting to do a relative valuation of the company and have collected the following information on the two businesses:

- MiniTel reported revenues of \$ 1 billion and an operating loss of \$ 80 million from the telecomm equipment business. Most other publicly traded companies in the business also reported operating losses, but the average EV/Sales Ratio for the sector is 1.20.
- MiniTel reported revenues of \$ 1.5 billion and EBITDA of \$ 150 million from the cable business. The average EV/EBITDA multiple for other publicly traded cable firms is 8.

MiniTel has \$ 1 billion in debt outstanding and a cash balance of \$ 600 million.

(1 billion = 1,000 million) (EV = Enterprise value = Firm value)

If there are 100 million shares outstanding, estimate the value of equity per share.

Exercise 6 (20%)

The current price of Natasha Corporation stock is \$6. In each of the next two years, this stock price can either go up by \$2.50 or go down by \$2. The stock pays no dividends. The one-year risk-free interest rate is 2% and will remain constant. Using the Binomial Model

- a) calculate the price of a two-year European call option on Natasha stock with a strike price of \$7.
- b) calculate the price of a two-year European put option on Natasha stock with a strike price of \$7.