Original

*Final Exam*

*Management V-Financial Management (5077)*
*SS 2006*

Date: July 28th 2006 Examiner: Prof. Lusk

# Instructions

1. You will have 120 minutes for working the examination.
2. No materials of any kind are permitted; this includes Books, Notes, or Script.
3. You may not pass anything to another person; this includes writing instruments and computational devises as examples.
4. Calculators are permitted in accordance with with the regulations enacted by the Board of examiners (Prüfungsausschuss).
5. You may not ask any questions during the exam. Any talking during the exam will result in you receiving a 5,0 on the examination.
6. You must show your work when calculations are called for. No Support calculations - ***no credit !***
7. A complete exam should have two (2) pages. Inform the proctor immediately if your exam is not complete!

## Section A (35 Pts)

You are considering a merger with a health care organisation: RUOK-Clinic. You collect 5 years of performance information on costs and revenues as a function of the number of patients X (in 000s) that they see. You then run a linear regression on the Cost and Revenue data and find that there seems to be structure in the residuals and so you run a quadratic regression for both the Cost data and the Revenue data. You notice that the R2 increases from what it was for the linear fit. The regression results for cost and revenue in terms of X $\in [0,940]$ are as follows, (the coefficients all in Euro Units):

$$\text{Cost: } 0{,}0005X^2 + 3{,}15X + 1.203$$
$$\text{Revenue: } -0{,}005X^2 + 9{,}44X - 34$$

1.) Can you use the standard marginal contribution as a ratio to fixed costs to find the breakeven point? Discuss! (5 Pts).
2.) Using the roots that you derive from the above information, find the breakeven points. (10 Pts).
3.) Using these roots find the optimal number of visits representing the maximum profit. (5 Pts)
4.) Prove that this is in fact the point of profit maximization. (10 Pts)
5.) What is the relevance of the information about structure in the residuals for the linear regression? (5 Pts)

## Section B: Short Answer Questions (30 Pts)

6.) Assume that the interest rates in the US for the dollar ($) and in Switzerland for the Swiss franc (CHF) are 6% and 4% respectively. Assuming that the CHF/$ spot rate is 2, what is the forward exchange rate for one (1) year and for two (2) years? (5 Pts)

7.) Assume that ABC Inc. is considering a merger with DEF Inc. DEF had 1.250.000 common shares outstanding with a per share price of 40. ABC has 20.000.000 common shares outstanding with a value of 10 per share. ABC offers 32,5% of its stock to close the merger deal. What is the apparent cost of the merger? (3 Pts) We use the adjective apparent cost. Why? (2 Pts)

8.) In Mergers and Acquisition sometimes there is Option value. What type of Option is the usual case? (2 Pts). When would it make economic sense to execute this option? (3 Pts)

9.) Why is it usually the case that Operating Gearing and Financial Gearing (sometimes called Leverage) are positively associated with the CAPM one-factor model ß?(5 Pts)

10.) Why is it usually the case that Operating Gearing is negatively associated with the Current Ratio? (5 Pts)

11.) Why it is almost always the case for IPO's that they are under priced, where under priced means that the opening price at the launch day is lower that the closing price after the first trading day. (5 Pts)

## Section C: Short Computation (35)

12.) Assume that ß for a company is 0,76 with a standard error of 0,11. Further, that the risk free rate is 2,01% and that the S&P500 is returning 6,83%. All returns on a yearly basis. Also the organisation has a debt to equity ratio of 30%. The tax rate paid last year was 22,5%. The weighted average pay-out for debt was 9,23%.
a) In General, how would the standard error for ß be used? (5 Pts)
b) For the specific information given above compute the Weighted Average Cost of Capital [WACC]. (10 Pts)

13.) Assume that the organisation uses as one of the evaluation measures for the organisation EVA. What are the general steps that one needs to go through to compute EVA? (7 Pts)

14.) Consider the following two projects [X and Y]:

| | Profit in 000s | |
|---|---|---|
| | X | Y |
| Worst Case Scenario | 0 | 500 |
| Average Scenario | 500 | 500 |
| Best Case Scenario | 1000 | 500 |

The Controller of the organization says: Since Projects X and Y have the same expected outcome, we are indifferent between them. Discuss this. (5 Pts)

15.) Consider the following information: the monthly returns of XYZ Inc. have the following statistical profile: Mean 0,0086 and Variance 0,00627. The Mean and Variance of the S&P 500 are respectively 0,0024 and 0,00197. The co-variance of XYZ with the S&P is 0,00232.

a) Compute the unique risk for XYZ Inc. (5 Pts)
b) Why does it seem reasonable that unique risk would be independent of systematic risk? (3 Pts)

# End of Examination