



CORPORATE INVESTMENT APPRAISAL

MASTERS IN FINANCE

EXAM

16 JANUARY 2013

2 HOURS + 15minutes

INSTRUCTIONS TO READ BEFORE STARTING ANSWERING THE QUESTIONS

1. Please fill in your name and student number.
2. The exam has 5 groups of questions, with marks clearly indicated.
3. You may use one A4 sheet of paper with notes.
4. The cumulative Normal distribution table is attached at the end.
5. You may un-staple the Normal table, and the scrap paper. Nothing else.

Good Luck!

Name _____ No. _____

PROFESSOR CLARA RAPOSO'S VIP AREA:

GROUP	GRADE	COMMENT
I		
II		
III		
IV		
V		
TOTAL		

GROUP I (4 points)

Firm FBI has two alternative investment opportunities, which are mutually exclusive: Project A and Project B. The Chief Financial Officer has prepared the following forecasted annual income statements for each project:

Project A	Years 1 to 4	Project B	Years 1 to 4
Revenues	€ 1 000 000	Revenues	€ 1 200 000
Costs of Goods Sold	300 000	Costs of Goods Sold	400 000
Depreciation	250 000	Depreciation	250 000
EBIT	450 000	EBIT	550 000
Interest Payments	20 000	Interest Payments	20 000
Earnings Before Taxes	430 000	Earnings Before Taxes	530 000
Net Income	€ 301 000	Net Income	€ 371 000

Both projects require initial capital expenditure of € 1 000 000, to be spent immediately. Annual net working capital is 10% of next year's revenues.

We also know that the cost of capital (discount rate) associated with project A is 8%, and the cost of capital for project B is 13%.

(I.a) (1 point) Compute the discounted payback period of project A. Interpret the result. Show your computations.

(l.b) (1.5 points) When comparing these two projects, what is the Incremental IRR? Based on this method, in which project should you invest? Explain and briefly comment.

(l.c) (1.5 points) In which project should you invest? Explain.

GROUP II (5 points)

Firm FBI considers investing in new project SECRET (same industry as usual for the company), for which the free cash flows have already been estimated:

t	0	1	2
FCF _t	-800	330	545

We know that FBI is financed with a ratio $D/E=1.25$, the beta of its shares is 1.2, and the firm is subject to corporate taxation at rate 35%. The firm's debt has an annual cost of 3%, which is 1% higher than the risk-free interest rate, and the market risk premium is 5%.

(I.a) (1.25 points) Assuming the project is financed with the same target capital structure as the firm, how good is this project? Show your computations and explain your answer.

(II.b) (1.25 points) If the company decided to finance the project with a lower target ratio of leverage $D/E = 1.0$, the cost of debt would be reduced to 2.75%. What would happen to the NPV of the project? Explain.

(II.c) (1.25 points) Assuming the company chooses to use the capital structure of question (II.a), what is the debt capacity of the project throughout its life? Explain.

(II.d) (1.25 points) Suppose that the company chooses to finance the project with a loan of 400, reimbursed at the end of 2 years, and with constant annual interest payments of 3% during 2 years. If the personal tax rate on equity income is 15% and the personal tax rate on interest income is 25%, how do you estimate the present value of the interest tax shield in this case? Explain.

GROUP III (3 points)

Modigliani-Miller's Proposition I regarding the choice of capital structure by firms in the "perfect" world scenario (absence of taxes, etc.) could well be explained via put-call parity. Explain how.

GROUP IV (4 points)

Company FBI has just announced a warrants issue. 250 000 warrants are immediately placed in the market for a unit price of €2.50. Each warrant is convertible into two new shares in 5 years time, when it is expected that the company will raise € 3 500 000 with the exercise of the warrants. The current share price of FBI is € 6, with a market cap of € 9 000 000. The company currently is unlevered. The volatility of its assets has been estimated as 15%, and the annual risk-free rate is 2% (in continuous time).

(IV.a) (1 point) What is the dilution factor of the warrants issue? Explain.

(IV.b) (2 points) Once they are issued, what is the fair price at which you think the warrants should be traded and what would happen to the stock price? Explain your estimates and comment your results.

(IV.c) (1 point) If the firm were to hire an investment bank to guarantee firm commitment (i.e., exercise of the warrants even if out of the money) what would the fair price of such a service be? Explain.

GROUP V (4 points)

In the framework of Merton's model, consider the following data of company FBI: Equity has a market cap of 25 and a volatility of 35%. In 2 years' time, a loan of 240 reaches its maturity (ignore intermediate cash flows). Additionally we know that the risk-free interest rate is 2% per year (continuous time), and that the bankruptcy costs are approximately 20% of the value of the assets at liquidation.

You are told that the value of FBI's Assets follows a binomial model, for which we have the following information:

TODAY	Year 1	Year 2
255.6016	264.6929	y
	x	255.6016
		z

(V.a) (1 point) Fill in the tree of the value of the assets. Explain your steps.

(V.b) (3 points) Is it credible to you that the Tree for the Value of the Assets of company FBI is the one in the previous table? Show your computations and explain your answer.

ADDITIONAL SPACE TO ANSWER ANY QUESTION, IF REQUIRED

SCRAP PAPER

SCRAP PAPER