Instituto Superior de Economia e Gestão
UNIVERSIDADE TÉCNICA DE LISBOA

CORPORATE INVESTMENT APPRAISAL

MASTERS IN FINANCE

EXAM

9 JANUARY 2012

2 HOURS + 30 minutes

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.

Good Luck!

Name____ No. ___________

PROFESSOR CLARA RAPOSO'S EXCLUSIVE AREA:

GROUP	GRADE	COMMENT
I		
II		
III		
IV		
V		
TOTAL		

GROUP I (4 points)

Firm EUQUD is analyzing a new investment project, called “VISION”. The following table shows forecasts of annual earnings for the firm in two scenarios: the Current Scenario (without the project), and the Scenario with Project “VISION”:

Current Scenario (without Project VISION)	**Years 1 to 4**	**Scenario with Project VISION**	**Years 1 to 4**
Revenues	€ 1 000 000	Revenues	€ 1 700 000
Operating Costs	€ 500 000	Operating Costs	€ 600 000
Depreciation	€150 000	Depreciation	€ 400 000
Interest Expenses	€ 80 000	Interest Expenses	€ 80 000
Net Income	€ 189 000	Net Income	€ 434 000

Project VISION requires immediate investment of € 1 000 000 in capital expenditures, and there is no working capital. We also know that the appropriate discount rate to use is 11%.

(I.a) (1.5 points) Determine the discounted payback period of project VISION. Show your computations.

(I.b) (1.25 points) “Since the net income more than doubles with project VISION, it is necessarily viable”. Do you agree with this statement? Explain.

(I.c) (1.25 points) “Project VISION’s IRR does not exceed 10%”. **Without computing the IRR**, do you agree with the statement? Explain.

GROUP II (4 points)

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

t	0	1	2
FCF_t	-500	620	435

We know that EUQUD is financed with a ratio D/E=0.3, the beta of its shares is 1.1, and the firm is subject to corporate taxation at rate 35%. The firm's debt is risk-free with an annual cost of 5%, and the market risk premium is 4.5%.

(II.a) (1.5 points) Assuming the project is financed with the same target capital structure as the firm, how good is this project? Show your computations.

(II.b) (1.5 points) What is the present value of the interest tax shield of this project? Show your computations.

(II.c) (1 point) If Project DIA is financed with equity of 250 and a debt of 250 (a loan with an annual interest payment of 6%), what is its net present value? Explain.

GROUP III (4 points)

(III.A) (1.5 points) Consider company EUQUD which is subject to a corporate income tax rate of 25%. Investors in the debt (bonds) issued by this firm are taxed at a personal rate of 30% on the interest earned. We were not given information about the personal tax rates on equity income. Suppose taxes are the only market imperfection. Is it advantageous for this company to have debt? Explain your answer.

(III.B) (2.5 points) Recall the asymmetric information problem (*lemons*) studied in the classes, regarding a company that needs to raise equity via an equity offering.

Consider there are two scenarios for the value of firm EUQUD without the new project: a more optimistic scenario (*High*) and a more pessimistic one (*Low*), each with probability ½. In scenario *High* the equity of the firm would be worth 200, whereas in scenario *Low* the equity would be worth 100. To simplify, consider a zero discount rate. The current market capitalization of the company is 150.

A new project appears, demanding an investment of 100 (right now), and with NPV of 12 (in both scenarios).

i. (1 point) Suppose the company goes ahead with the project. At the end of the year, when the true scenario is revealed, what will happen to the total value of equity (in each scenario, "High" and "Low")? And what will be the value of the shares of the "old" shareholders? Show your computations.

ii. (0.75 points) If the manager already knew the true scenario at the time of deciding to go ahead with the project, do you think the manager would go ahead? Explain.

iii. (0.75 points) How good (in terms of NPV) would the new project have to be for the informed manager to decide to invest in the project in both scenarios? Explain.

GROUP IV (4 points)

Firm EUQUD has just announced a new issue of convertible bonds. 1 million bonds will be placed in the market at their nominal value, which is € 5. The bonds promise to pay an annual coupon of 4%. Each bond may be converted into shares at maturity for a price of €5 per share, which takes place in two years time. By then the company wishes to see its equity value increase by € 5,000,000 (if conversion takes place). The current stock price of EUQUD is € 5, and its market capitalization is € 15,000,000. The firm currently has no debt. We have estimated an annual volatility of 30% for EUQUD's assets. The risk-free interest rate is 3% (continuous compounding) and the yield-to-maturity of the straight bonds issued by companies similar to EUQUD is 4%.

(IV.a) (2.5 points) What is the value of the convertible bonds issue at the time of its announcement? Comment briefly.

(IV.b) (1.5 points) What is the expected price of the shares immediately after the convertibles are issued? Comment briefly.

GROUP V (4 points)

Within the framework of Merton's Model, consider the following data concerning company EUQUD: The stock has a market capitalization of 40 and an annual volatility of 40%. After 3 years, EUQUD's debt of 220 reaches maturity (ignore intermediate cash flows). We also know that the annual risk-free rate of interest is 3% and that bankruptcy costs are approximately 15% of the asset value at the time of Liquidation.

Does it seem credible to you that the tree for this company's Assets is the one presented in the following table? Explain your answer.

Asset Value Tree

t	**0**	1	2	3
	195,7597484	264,248021	356,69752	481,49129
		145,022388	195,75975	264,24802
			107,43523	145,02239
				79,589974

ADDITIONAL SPACE TO ANSWER ANY QUESTION, IF REQUIRED