



CORPORATE INVESTMENT APPRAISAL

MASTERS IN FINANCE

EXAM

26 JANUARY 2015

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)

GoGo Motors currently produces 500,000 electric motors a year and expects output levels to remain steady in the future. It buys armatures from an outside supplier at a price of \$2.50 each. The plant manager believes that it would be cheaper to make these armatures rather than buy them. Direct in-house production costs are estimated to be only \$1.80 per armature. The necessary machinery would cost \$700,000 and would be obsolete in 10 years. This investment would be depreciated to zero for tax purposes using a 10-year straight line depreciation. The plant manager estimates that the operation would require additional annual working capital of \$40,000 but argues that this sum can be ignored since it is recoverable at the end of the ten years. The expected proceeds from selling the machinery after 10 years are estimated to be \$10,000. GoGo Motors pays tax at a rate of 35% and has an opportunity cost of capital of 14%.

(I.a) (1.5 points) What are the annual Free Cash Flows of the decision to go ahead with the project of producing direct-in-house armatures? Explain.

t	0	1 to 9	10	11
Incremental Revenues	0	0	0	0
Incremental Op Costs	0	-350000	-350000	0
Incremental Deprec	0	70000	70000	0
EBIT	0	280000	280000	0
EBIT(1-Tc)	0	182000	182000	0
Unlevered NI	0	252000	252000	0
NWC	40000	40000	0	0
Increase NWC	40000	0	-40000	0
CapEx	700000	0	0	0
Liquidation	0	0	6500	0
FCFt	-740000	252000	298500	0

(l.b) (1.5 points) Based on the cash flows estimated in part (l.a) should GoGo Motors go ahead with this project? Explain.

576214,4776 NPV

Yes, go ahead, positive NPV

(l.c) (1 point) Without making any further computations, what can you say about the IRR of this project? Explain.

IRR larger than 14%, since NPV positive and FCF structure etc...

GROUP II (6 points)

IRYNASH Industries is a well-known company in the entertainment industry. Its market capitalization is currently €20 million, and it has debt of €10 million. The company holds cash and equivalents of €5 million and its Other Assets are worth €25 million. The company has 500,000 shares outstanding. IRYNASH is currently considering investment in a new project for 4 years, in its usual line of business. Project MA2 requires immediate investment of €650,000 and has the following estimated annual free cash flows:

t	1	2	3	4
FCFt	€220,000	€260,000	€230,000	€150,000

IRYNASH's cost of debt is 1 percentage point above the risk-free interest rate, and the beta of its shares is around 1.25. The company pays taxes of 40% on its income. Current market conditions are such that the risk-free interest rate is 1.5% and the market risk premium is 4%.

(II.a) (2 points) Suppose that IRYNASH Industries intends to finance the new project with a target ratio of debt-to-equity, which is the same that the company currently has. Should the company invest in this new project? Explain.

Data:

IRYNASH:

E	20 million	
Debt	10 million	
Cash	5 million	
Enterp Value	25 million	
# shares	0,5 million	
Rd	Rf+1%	2,50%
Be	1,25	
Tc	40%	

PROJECT MA2

t	0	1	2	3	4
FCFt	-650000	€ 220 000	€ 260 000	€ 230 000	€ 150 000

MARKET

Rf	1,50%
Rm-Rf	4%

IRYNASH:

D	5
D/E	0,25
D/(D+E)	0,2
Re	6,50%
Rwacc	0,055

PROJECT MA2:

NPV	109 082,09 € >0, should invest.
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(II.b) (1 point) What will happen to the stock price of IRYNASH once the new project MA2 is announced and investors have the same information that we have? Explain.

New E 20 109 082,09 €

New Price 40,21816 € increases from 40 to 40.22.

(II.c) (1.5 points) Now suppose that IRYNASH decides to use a different capital structure, with a higher ratio of debt-to-value, equal to 0.5. In this scenario the beta of the shares would increase to 1.4. By how much does the cost of debt change? Explain.

Ru	0,05700	With initial data
D/E	1	NEW
Be	1,4	NEW
Re	7,10%	NEW via CAPM
Rd	0,04300	NEW via MM Prop II

(II.d) (1.5 points) Suppose that IRYNASH finally decides to finance the project with the target capital structure presented in question (II.a). If the stock price goes up to €40.02, what is your estimate of the present value of the costs of financial distress? Explain.

From a)			
NPV	109 082,09 €		
		20 109 082,09	
Enterprise value			€
Price would be		40,21816 €	
Price moves only			
to		40,02	
This means that			
EV would be	20010000	PriceX#shares	
NPV Project	10000		
So PV(FDC)	99 082,09 €	Conclusion: Too much debt!	
		Higher than PV(ITS) if compare to financing the	
		project with Ru...	

GROUP III (3 points)

Suppose you want to perform the valuation of a large listed company such as The Coca-Cola Company. Describe and justify which steps you would follow, which method(s) you would choose, which elements you would estimate and which sources of information you would use for your purposes.

Explain steps followed in the group work assignment. Which valuation method to choose, which information required, from which sites/sources to get what, and how to compute/estimate each ingredient.

GROUP IV (4 points)

IRYNASH Industries has just announced a rights issue. Each share receives a right convertible into two new shares in 9 weeks' time, when it is expected that the company will raise € 18,000,000 with the exercise of the rights. IRYNASH Industries currently has 2,000,000 shares with a market cap of € 20,000,000. Suppose the company currently is unlevered. The volatility of its equity has been estimated as 25%, and the annual risk-free interest rate is 1.5% (in continuous time).

(IV.a) (2 points) If you are a shareholder of IRYNASH Industries, by how much are you willing to sell your rights? Explain.

T	0,173076923	
mrK	18000000	
n	2000000	
m	n	2000000
r	2	
K	4,5	mrK/mr
V	20000000	
Sigma	25%	
Rf	1,50%	
Lamda	$mr/(n+mr)$	0,666666667
nK	9000000	
PV(nK)	8976664,919	
d1	7,754459166	
d2	7,650452879	
N(d1)	1,00	
N(d2)	1,00	
Call	11023335,08	
Rights	7348890,054	
1right	3,674445027	
assuming zero NPV, etc...		

(IV.b) (1 point) Once the rights are traded in the market, what happens to the price of your share? Is this good or bad news to you? Explain.

As long as expectations are neutral regarding the NPV associated with the new equity to be issued, the price would go down, but the situation would be indifferent for a shareholder who keeps the share (lower price) but has a right with value (the difference).

Equity	12651109,95	
Price		
Share	6,325554973	goes down, but I have also 1 right
Total value	10	

(IV.c) (1 point) How much would you be willing to pay for a firm commitment service? Explain.

Given extremely high likelihood of exercise of the rights, the firm commitment would be (theoretically) worthless.

Put	0	
		assuming zero NPV,
Lambda*Put	0	etc...

GROUP V (3 points)

In the context of Merton's model consider the valuation of IRYNASH Industries' debt, knowing that the company owes € 10,000,000 to its creditors, to be repaid in year 2. The current market capitalization of this company is € 20,000,000, with a volatility of the stock returns of 25%. The current annual (continuous) risk-free interest rate is 1.5%. The tree presented below represents a guess made by Mr. Creditor on the value of IRYNASH Industries' assets (values in Euros):

t=0	t=1	t=2
29704455	X	Y
	25102617	29704455
		Z

(V.a) (1 point) Complete the tree that Mr. Creditor is building (values X, Y, and Z), and estimate the underlying volatility of the assets that he is considering. Explain.

29704455	35149907	41593625
	25102617	29704455
		21213700
Asset Vol:	16,83%	

(V.b) (2 points) Is it credible to you that the current value of the debt of this company is approximately € 9,704,455? Explain.

We can check the tree for the Equity based on the asset tree of part a):

Stock Value Tree

20000000,0000	25298787,7464	31593624,8675
	15251497,8941	19704455,3355
		11213699,6857

The price is right, and so is the implied volatility

Implied
Stock Vol: 25,00%

Therefore the credible Debt tree would be:

9704455,3355	9851119,3960	10000000,0000
	9851119,3960	10000000,0000
		10000000,0000

Confirming what is suggested in the question.

ADDITIONAL SPACE TO ANSWER ANY QUESTION, IF REQUIRED

SCRAP PAPER

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