



FINANCIAL MARKETS AND MANAGEMENT

MASTERS IN MANAGEMENT

EXAM

27 JANUARY 2021

1 hour + 30 minutes

INSTRUCTIONS TO READ BEFORE STARTING TO ANSWER THE QUESTIONS

1. Please fill in your name and student number.
2. The exam has 13 questions, with marks clearly indicated.
3. You may use one A4 sheet of paper with notes.
4. You may un-staple the scrap paper at the end of the exam (pages 17 and 18).
Nothing else.
5. In case of doubts, state clearly any assumptions you make and keep going.
6. There is an extra sheet of paper at the end if you need extra space to complete any answer (pages 15 and 16).

Good Luck!

Name _____ No. _____

1. (1.5 points) 3Billboards is a U.S. manufacturer of swimwear. It considers launching a new line of sports swimwear named Malaka, for which the company already spent \$ 260,000 in research and development. Starting production of the new sports swimwear collection Malaka requires investing today in new equipment that will cost \$400,000 and will last for four years. The equipment will be fully depreciated, straight line, at the end of 4 years. In order to make a final investment decision, 3Billboards has estimated two scenarios for its consolidated income statement, a first scenario without the new project, and a second scenario including project Malaka. It is also well-known that in this line of business, the annual net working capital is approximately 10% of total revenues. The forecasted annual income statements are presented below and are supposed to be constant during the 4 years of this project.

3Billboards' Forecasted Annual Income Statement	without project Malaka	with project Malaka
Revenues	\$ 12,000,000	\$ 15,000,000
Cost of Sales	6,000,000	7,500,000
Selling, General & Admin Expenses	2,500,000	3,000,000
Depreciation	1,000,000	1,100,000
EBIT	2,500,000	3,400,000
Interest Expenses	750,000	750,000
Net Income	1,749,475	2,379,475

Compute the annual free cash flows (FCFF) of project Malaka. Show all your computations.

Incremental Income Statement for Project Angela:

3Billboards' Forecasted Annual Income Statement	Project Angela
Revenues	3000000
Cost of Sales	1500000
Selling, General & Admin Expenses	500000
Depreciation	100000
EBIT	900000
Interest Expenses	0
Net Income	630000

EBT	900000
Taxes	270000
Tc	0,3

t	0	1	2	3	4	5
Revenues	0	3000000	3000000	3000000	3000000	0
Cost of Sales	0	1500000	1500000	1500000	1500000	0
Selling, General & Admin Expenses	0	500000	500000	500000	500000	0
Depreciation	0	100000	100000	100000	100000	0
EBIT	0	900000	900000	900000	900000	0
EBIT(1-Tc)	0	630000	630000	630000	630000	0
CapEx	400000	0	0	0	0	0
NWC	0	300000	300000	300000	300000	0
Change in NWC	0	300000	0	0	0	-
FCFt	-400000	430000	730000	730000	730000	300000

2. (1 point) Project Malavita has a cost of capital of 12% and the following annual cash flows:

t	0	1	2	3
FCFt	-1000	413	520	320

What is the project's discounted payback period? Should the company invest? Show all your computations and justify your answers.

	r	12%		
disc FCF	-1000	368,75	414,540816	227,769679
cumulative	-1000	-631,25	-216,70918	11,0604956
dpp		2,95144	yrs	
NPV		11,0604956		
Invest				

Yes, NPV positive. DPP during the 3rd year.

3. (1 point) Company Strong has already computed the NPV of a new project opportunity (Project Bold). With a cost of capital of 13%, the project has a positive net present value of 16.62, based on the following estimated cash flows:

t	0	1	2	3	4	5
FCFt	-1200	550	920	-1100	630	710

Without performing any computations, do you agree with the statement "Project Bold's IRR is definitely higher than 13%"? Explain your answer.

It is likely that IRR is larger than 13% since NPV is positive with that discount rate. Yet, the structure of cash flows involves more than one change in sign over time, which means we cannot be sure that we can interpret the IRR in the usual way (without making further computations).

4. (1 point) Company FLY is a well-established producer of skates. It is now considering launching a new product that combines traditional skates with an extra spring that should move the skating experience into a new level. FLY is comparing two alternative production technologies, TechX and TechY for which we have this summary information:

Technology	TechX	TechY
Life of equipment	3 years	5 years
Cost of Capital	13%	12%
NPV	210	290

Which technology should FLY choose? Explain your answer.

If One-Shot Y

a3,13% a5,12%
 2,3611526 3,6047762
 EA EA
 88,9396137 80,4488223
 Perp Perp
 684,150875 670,406852

If Forever X

5. (1 point) Consider the following binomial tree for the evolution of the stock price of company BING over the next two semesters:

TODAY	Semester 1	Semester 2
100	132.689644	176.065417
	75.3638316	100
		56.7970712

Compute the up and down factors (u, d) of the binomial model implied in this tree and provide an estimate of the annual volatility of BING's stock. Show all your computations.

u 1,32689644
 d 0,75363832

$$1.32689644 = e^{\sigma\sqrt{0.5}}$$

$$\sigma = 0.4$$

8. (2.5 points) Consider the following financial information regarding the GetOut Corporation:

GetOut Corp.'s Market Value Balance Sheet (€ Millions) | Cost of Capital information

Assets		Liabilities&Equity		Betas		
Cash	50	Debt	750	Debt	0.3	
Other Assets	1050	Equity	350	Equity	1.75	
					Corporate Tax rate τ_c	35%

The company is now analyzing a new project called Armitage with estimated expected cash flows:

GetOut.'s New Project Armitage Free Cash Flows (€ thousands)

Year	0	1	2
Free Cash Flows	-550	275	650

Assume that this new project is of average risk for the GetOut Corp. and that the firm wants to hold constant its debt-to-equity ratio. Currently the risk-free interest rate is 2.5% and the expected market risk premium is 5.75%.

Compute the Net Present Value of this project and make an investment recommendation. Show all your computations and explain your answer.

D	700
E	350
D+E	1050
D/(D+E)	0,66666667
E/(D+E)	0,33333333
Rd	0,04225
Re	12,56%
Rwacc	0,06018333
NPV	€287,69

NPV positive, so invest.

9. (1.5 points) Company GREENE has a Debt-to-Equity ratio (D/E) of 0.5, a cost of debt of 3%, a cost of equity of 8% and pays corporate taxes at rate 21%. The company decides to finance its new project (Project RACHE) with the same target capital structure and the project is similar to the current activities of the firm. The project has the following cash flows:

Year	0	1	2
Free Cash Flows	-550	275	650

Using the WACC discount rate, the firm has already computed a Net Present Value of 286.3. What is your estimate of the present value of the Interest Tax Shield? Show all your computations.

D/E	0,5
Rd	3%
Re	8%
Tc	21%
Rwacc	0,06123333
NPV	€286,29

PreTax	
WACC	0,06333333
NPV	€283,50

PV(ITS)	€2,79
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10. (2 points) Company GREENE has a Debt-to-Equity ratio (D/E) of 0.5, a cost of debt of 3%, a cost of equity of 8% and pays corporate taxes at rate 21%. The company decides to finance its new project (Project RACHE) with the same target capital structure and the project is similar to the current activities of the firm. The project has the following cash flows:

Year	0	1	2
Free Cash Flows	-550	275	650

Using the WACC method the company computed a net present value of 286.3 for project RACHE. Apply the Flow-to-Equity (FTE) method to assess the quality of the project.

D/E	0,5	D/(D+E)	0,33333333
Rd	3%		
Re	8%		
Tc	21%		
Rwacc	0,06123333		
NPV	€286,29		

t	0	1	2
FCFt	-550	275	650
PVt	€836,29	€612,49	0
Dt	€278,76	€204,16	€0,00
Interest t	0	€8,36	€6,12
ITS	0	1,75620123	1,28623928
Net Borrowing	€278,76	-€74,60	-€204,16
FCFet	-€271,24	€193,80	€441,00
NPV	€286,29		

11. (2 points) On December 22, 2017, U.S. President Trump signed the “Tax Cuts and Jobs Act” into law. The overall spirit of the law was to reduce tax rates on personal income (some of these cuts were temporary) and on corporate income. In what concerns corporations, the top income tax rate was cut from 35% to 21%, starting in 2018. Additionally, interest deductions for tax purposes at corporate level are now limited: they cannot exceed 30% of EBITDA. Based on the theories covered in the FMM course unit, what do you think is the impact of these measures on the capital structure of U.S. firms? Explain your arguments.

SUBJECT TO INTERPRETATION

12. (2 points) Explain what Put-Call Parity is and how you can use it as an analogy to explain Modigliani-Miller (1958)’s Proposition 1 (in the “perfect world” without taxes).

SUBJECT TO INTERPRETATION

13. (2 points) If you wanted to assess the viability of an investment project to launch an innovative pair of NIKE sneakers, explain which steps you would follow and what sources of information you would resort to.

SUBJECT TO INTERPRETATION