



LISBON
SCHOOL OF
ECONOMICS &
MANAGEMENT

UNIVERSIDADE DE LISBOA

Corporate Investment Appraisal

Masters in Finance

2016-2017

Fall Semester

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Problem Set 5: Investment Decision Rules

TO HAND IN SOLUTIONS IN CLASS OF OCTOBER 31ST

1. Consider the following information about an investment project:
 - Life: 5 years
 - Investment in Fixed Assets: 150
 - Sales: 100 in year 1, annual growth rate 2%
 - Cost of Goods Sold: 40 in year 1, annual growth rate 4%
 - Selling Expenses: 8 in year 1, annual growth rate 2%
 - Administrative Expenses: 6 in year 1, annual growth rate 4%
 - Net Working Capital: 8 in year 1, annual growth rate 4% until year 5
 - Depreciation: 10% per year during 5 years
 - Income Tax Rate: 30%
 - Market Value of Assets at Liquidation: 80 in year 5
 - Cost of Capital for this project: 10%

Based on all this information, characterize the project in terms of discounted payback period, NPV, IRR and Profitability Index. Should the project go ahead? Explain.

2. CJS is a company operating in the chemical components industry. It intends to acquire a new industrial machine, having received two proposals that differ in price, life, and capacity. Estimated cash flows (in real terms) are as follows:

	Ano 0	1	2	3
Equipment A	(850)	400	400	400
Equipment B	(400)	300	300	-

Unit: thousands of euros

The suppliers of both equipments commit to supplying similar (replacement) machines at the end of their lives.

Considering a cost of capital (in real terms) of 11%, which of the equipments is more desirable? Explain.

3. Consider a 4-year project with the following information:

Initial CapEx: € 1 100 000;
Annual Depreciation: Straight line, in full;
Residual Value: 0;
Unit Sale Price: € 28;
Unit Variable Cost: € 17;
Fixed Costs: € 380 000;
Number of Units: 110 000;
Corporate Tax Rate: 23%
Cost of Capital: 8%

- a) How good is the project? Explain.
b) How sensitive is the NPV of this project to the number of units sold?

4. Suppose you are the financial analyst of a tennis racket producer. The firm is considering using a new material for its rackets. It has estimated the data contained in the table below, regarding the potential market for that new racket. The firm expects to sell that new racket for 5 years. The equipment used in this project has no residual value. The cost of capital appropriate to this kind of project is 15%. The firm is subject to income taxes at rate 25%. Do you recommend investing in the project? Explain.

	Pessimistic	Expected	Optimistic
Size of the Market	100 000	150 000	200 000
Market Share	20%	25%	30%
Unit Sale Price	€ 115	€ 120	€ 125
Unit Variable Cost	€ 75	€ 70	€ 65
Fixed Annual Costs	€ 750 000	€ 750 000	€ 750 000
Initial Investment	€ 1 500 000	€ 1 500 000	€ 1 500 000