

## Corporate Investment Appraisal

Masters in Finance

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Fall Semester

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### Problem Set 5: Investment Decision Rules

**TO HAND IN SOLUTIONS IN CLASS OF OCTOBER 30<sup>TH</sup>**

1. Consider the following information about an investment project:
  - Life: 5 years
  - Investment in Fixed Assets: 120
  - Sales: 100 in year 1, annual growth rate 4%
  - Cost of Goods Sold: 40 in year 1, annual growth rate 4%
  - Selling Expenses: 8 in year 1, annual growth rate 5%
  - Administrative Expenses: 6 in year 1, annual growth rate 4%
  - Net Working Capital: 8 in year 1, annual growth rate 5% 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	(800)	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 of 12%, which of the equipments is more desirable? Explain.

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

Initial CapEx: € 450 000;  
 Annual Depreciation: Straight line, in full;  
 Residual Value: 0;  
 Unit Sale Price: € 26;  
 Unit Variable Cost: € 16;  
 Fixed Costs: € 180 000;  
 Number of Units: 100 000;  
 Corporate Tax Rate: 36%  
 Cost of Capital: 11%

- 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 12%. The firm is subject to income taxes at rate 40%. Do you recommend investing in the project? Explain.

	<b>Pessimistic</b>	<b>Expected</b>	<b>Optimistic</b>
Size of the Market	110 000	120 000	130 000
Market Share	20%	25%	30%
Unit Sale Price	€ 115	€ 120	€ 125
Unit Variable Cost	€ 72	€ 70	€ 68
Fixed Annual Costs	€ 850 000	€ 800 000	€ 750 000
Initial Investment	€ 1 500 000	€ 1 500 000	€ 1 500 000