LISBON SCHOOL OF ECONOMICS & MANAGEMENT
UNIVERSIDADE DE LISBOA

Corporate Investment Appraisal

Masters in Finance

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Problem Set 4: Investment Decision Rules

TO SOLVE IN CLASS

1. Consider the following information regarding a new investment project of firm EE:

- Life: 3 years
- Initial Investment in Fixed Assets: $10,000
- Sales: $10,000 in year 1, annual growth rate 2%
- Cost of Goods Sold: $3200 in year 1, annual growth rate 3%
- Selling, General and Administrative Expenses: $500 in year 1, annual growth rate 2%
- Net Working Capital: $1000 in year 0, annual growth rate 3%, yrs 1 and 2
- Depreciation: in full, straight-line, over the 3 years
- Corporate Income Tax Rate: 35%
- Market Value of Equipment at liquidation date: $3500
- Cost of Capital: 11%.

(a) Does the project payback the initial investment?

(b) Should the project go ahead?

(c) There is an alternative project (known as NOVO), with discount rate 10%, and the following cash flows:

T	0	1	2
FCFFt	-8000	5800	7000

Which project is preferable?

2. Company EFE, plc has two alternative investment opportunities, which are mutually exclusive. They are projects A and B. The Chief Financial Officer produced the following forecasted annual income statements for each project:

Project A	Years 1 to 4	Project B	Years 1 to 5
Sales	€ 1 000 000	Sales	€ 1 200 000
Operating Costs	250 000	Operating Costs	400 000
Depreciation	250 000	Depreciation	200 000
EBIT	500 000	EBIT	600 000
Interest Payments	20 000	Interest Payments	20 000
Earnings Before Taxes	480 000	Earnings Before Taxes	580 000
Net Income	288 000	Net Income	348 000

Both projects require an initial investment in fixed assets of € 1 million. No investmentb in net working capital is expected.

We further know that the cost of capital associated to project A is 10%, whereas project B's cost of capital is 12%.

(a) What is the payback period of Project A?

(b) "Project A's IRR certainly does not exceed 10%." Do you agree with the statement?

(c) Which project is better?

3. SENSITIVITY Corp. is studying a project to launch a NEW tooth paste (values in thousands of Japanese Yens). The Marketing Department has provided us with the following forecasted values:

Item	Data
Sales (quantities)	1450 Tons
Advertising Costs	10% of Sales
Sale Price	¥5/Ton

The costs associated with this project are:

Item	Data
Raw Materials	¥2/Ton
Costs with Personnel	¥1000
Capital Expenditures	¥6000

The project lasts for 3 years and the Chief Operations Officer finds a return of 7.398% appropriate. The corporate income tax rate is 40% (assume that negative earnings of the project in a given year contribute to overall tax reduction for the company in the same year).

(a) Assess the financial potential of the project.
(b) Conduct sensitivity analysis for the following inputs:

- Sale Price: -10%
- Advertising Costs: +10%
- Raw Materials: +10%
- Discount Rate: 10%
- Sale Price: -10% and Raw Materials: +10%

(c) Analyze the following 2 scenarios:

Item	Optimistic scenario	Pessimistic scenario
Sale Price	¥5.5/Ton.	¥4.5/Ton.
Advertising Costs	6%	14%
Variable Costs	¥1.8	¥2.2
Costs with Personnel	¥1000	¥1200