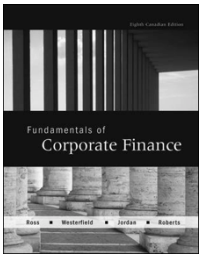
Finance for Management and Organizational Studies

MOS 2310

Chapter 11

Project Analysis and Evaluation



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Project Analysis and Evaluation

- Evaluating NPV Estimates
- Scenario and Other What-If Analyses
- Break-Even Analysis
- Operating Cash Flow, Sales Volume, and Break-Even
- Operating Leverage
- Managerial Options
- Capital Rationing

LO1

Evaluating NPV Estimates 11.1

- The NPV estimates are just that; estimates
- A positive NPV is a good start; now we need to take a closer look
  - Forecasting risk: how sensitive is our NPV to changes in the cash flow estimates? The more sensitive, the greater the forecasting risk
  - Sources of value: why does this project create value?

Challenges

Challenges to the Capital Budgeting Process…..

- Ensuring forecasts are consistent;
- Eliminating conflicts of interest;
- Reducing forecast bias;
- Choosing appropriate selection criteria;
- And many others

..and Possible Solutions

Scenario Analysis
- Project analysis given a particular combination of assumptions; changes several variables at once

Sensitivity Analysis
- Analysis of the effects of changes in sales, costs, etc. on a project; changes inputs one at a time

Break-Even Analysis
- Analysis of the level of sales (or other variable) at which the company breaks even

Simulation Analysis
- Estimation of the probabilities of different possible outcomes; computer generates probability of outcomes

Scenario Analysis

Is a process of analyzing possible future events by considering alternative possible outcomes (scenarios)
- There are a number of possible scenarios
- Worst case (pessimistic) scenario = minimum NPV
- Best case (optimistic) = Upper bound NPV
- There are unlimited number of different scenarios
- Paralysis of analysis
- Useful in telling us what can happen
- Does not necessarily tell us whether or not to take on the project

LO4

Operating Leverage 11.5

- Operating leverage is the relationship between sales and operating cash flow
- Degree of operating leverage measures this relationship
  - The higher the DOL, the greater the variability in operating cash flow
  - The higher the fixed costs, the higher the DOL
  - DOL depends on the sales level you are starting from
- DOL = 1 + (FC / OCF)

LO5

Managerial Options 11.6

Managerial options (real options)
- Opportunities that managers can exploit if certain things happen in the future
- Planning for different contingencies
  - ◆Option to expand: increased cash flows by expand or repeat the project and/or increase the price
  - ◆Option to abandon: scale back or abandon if demand were significantly below expectations
  - ◆Option to wait: in hope of more favourable conditions

Sensitivity Analysis

A sensitivity analysis calculates the consequences of incorrectly estimating a variable in your NPV analysis

- If forces you:
  - To identify the variables underlying your analysis
  - To focus on how changes to these variables could impact the expected NPV
  - To consider what additional information should be collected to resolve uncertainties about the variables

Sensitivity Analysis

- You must run a sensitivity analysis by asking yourself what if your forecasts (initial investment, sales, costs) change?
- Only one variable changes at a time, all other variables stay that their expected level; calculate the NPV and show effects of the changes

	Pessimistic	Expected	Optimistic
Investment	$6,200	$5,400	$5,000
Sales	$14,000	$16,000	18,000
Variable costs	83.0%	81.25%	80%
Fixed costs	$2,100	$2,000	$1,900
NPV	$(3,376.46)	$478	$3,942.84

LO6

Capital Rationing

- Capital rationing occurs when a firm or division has limited resources
  - Soft rationing – the limited resources are temporary, often self-imposed
  - Hard rationing – capital will never be available for this project
- The profitability index is a useful tool when faced with soft rationing