

Chapter 6 Making Investment Decisions with the Net Present Value Rule

OVERVIEW

In this chapter, many practical aspects of capital budgeting are covered. From a practical point of view, this is an extremely important chapter. Topics include cash flow estimation; depreciation; project evaluation in other countries and currencies; projects with differing lives; equivalent annual cost; the decision to replace an existing machine; and the cost of excess capacity. All these topics are of interest to financial planners. These topics are of immense interest to project managers and engineers also.

LEARNING OBJECTIVES

- To estimate cash flows for a capital-budgeting project
- To handle issues related to inflation
- To solve realistic, complex capital-budgeting problems when the timing of alternatives vary
- To employ equivalent annual cash-flow techniques

CHAPTER OUTLINE

Applying the net present value rule

- Only cash flow is relevant.
- Cash flows should be estimated incrementally. The financial manager should look at the difference in the firm's cash flow *with* the project versus *without* it.
- Include all incidental effects
- Do not forget working-capital requirements
- Include opportunity costs
- Forget sunk costs
- Inflation rates must be recognized and treated consistently; nominal discount rates for nominal cash flows and real rates for real flows. No mixing allowed!

Example – IM&C's Fertilizer Project

This is a detailed example showing how cash flows are forecasted. You are reminded to separate investment and financing decisions, and to closely keep track of working-capital requirements. The tax consequences of the Modified Accelerated Cost Recovery MACRS depreciation schedules are explained. The use of a spreadsheet for this purpose is demonstrated. Project analysis methods and procedure for calculating NPV are discussed.

Using the NPV rule to choose amongst projects

Sometimes you have the ability to defer an investment and select a time that is more ideal at which to make the investment decision. A common example involves a tree farm. You may defer the harvesting of trees. By doing so, you defer the receipt of the cash flow, yet increase the cash flow.

Equivalent annual cash flows are examined whenever we have competing projects with different life spans. This is the annual cash flow sufficient to recover a capital investment including the cost of capital, over the economic life of the investment. This method is useful for making the following types of decisions.

- Choosing between long- and short-lived equipment
- Deciding when to replace an existing machine
- Equivalent annual cost and technological change
- Evaluating the cost of excess capacity