Capital Budgeting

- What is capital budgeting?
- How do we compute the value of a bond?
- How do we compute the value of a share of stock?
- How do we compute the value of a project?
Relevant Incremental Cash Flows

- Sunk Costs?
- Opportunity Costs?
- Side Effects?
- Changes in Net Working Capital?
- Taxes?
- Financing Costs?

Project Cash Flows
Net Working Capital

- What is net working capital?
- Why include it?
- Is it a cash inflow or a cash outflow?

*Don’t forget to recover net working capital at the end of the project.

*Don’t forget to recover net working capital at the end of the project.
Salvage Value and Taxes

- How do we calculate the book value of an asset?
- What if we sell an asset for more than book value?

Salvage Value and Taxes

- In year 4, we sell a machine for $1,000. The book value of the machine is $800. The tax rate is 30%. What is the after-tax salvage value?
Salvage Value and Taxes

- What if we sell an asset for less than book value?

- In year 4, we sell a machine for $1,000. The book value of the machine is $1,200. The tax rate is 30%. What is the after-tax salvage value?

- What if we sell an asset for book value?
Depreciation

- Two different ways to calculate:
  - Straight-Line Depreciation
  - MACRS

Straight-Line Depreciation

- Annual depreciation expense = \( \frac{(purchase \ price - ending \ book \ value)}{number \ of \ years} \)

- You just bought a new machine for $15,000, which can be depreciated to zero over 5 years. What is the annual depreciation expense if the firm uses straight-line depreciation?
MACRS Depreciation

- How is it different from straight-line?
- Always depreciate to zero.
- Assumes asset is purchased halfway through first year.
- Property class assigned. Then use tables.

MACRS Depreciation Table

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MACRS Depreciation: An Example

- You just bought a new machine for $15,000, which is in the 5-year asset class. Create a MACRS depreciation schedule.

Example #1

You are considering the introduction of a new product, EasyBs, which will be on the market for 5 years. Last year, you spent $20,000 on a market study to determine the appropriate price would be $5 per unit. You expect sales to be 10,000 units in year 1 and grow by 2,000 units each year after. Costs are expected to be 20% of sales, and the firm’s marginal tax rate is 40%. In addition, you must purchase a manufacturing machine for $100,000, which is depreciated using MACRS (3-year class), and worthless at the end of the project. Due to an increase in inventories, net working capital is expected to increase by $15,000. If the required return on this project is 12%, should you introduce EasyBs?
Company Valuation

- How do we do it?

- The main difference:
Risk Analysis

- Sensitivity Analysis
- Scenario Analysis
- Simulations

Chapter 10
Suggested Problems

- Concepts Review and Critical Thinking Questions:
  - 1, 2, 6, and 7

- Questions and Problems:
  - 1, 2, 6, 7, 8, 9, 10, 13, 14, 15, and 31 (use a spreadsheet for problem 31).
Example #2

Auburn Industries is evaluating the option of purchasing a fork-lift truck costing $60,000. If purchased, the truck will replace 4 workers, each with an average annual salary of $15,000. However, an experienced fork-lift operator will have to be hired at a salary of $20,000 per year. Fuel and maintenance expense is expected to be $10,000 per year. At the end of its 5-year life, the truck will have a market value of $10,000. Auburn Industries uses straight-line depreciation and depreciates the asset to $0, assigns a 10% required rate of return for this type of investment, and has a marginal tax rate of 40%. Should the fork-lift truck be purchased?

Example #3

A company is considering the acquisition of production equipment which will reduce both labor and materials costs. The cost is $100,000 and it will be depreciated on a straight-line basis down to $0. The useful life of the equipment is five years, and it will have a $20,000 market value at the end of five years. Operating costs will be reduced by $30,000 in the first year and the savings will increase by $5,000 per year in years 2, 3, and 4. Due to increased maintenance costs, savings in year five will be $10,000 less than the year four savings. The equipment will also reduce net working capital by $5,000 throughout the life of the project. The firm’s tax rate is 35 percent and the required return is 16 percent. Should the firm purchase this production equipment?
Example #4

You have been asked by the president of your company to evaluate the proposed acquisition of a new flux capacitor for the firm’s R&D department. The equipment’s basic price is $70,000 and it would cost another $15,000 to modify it for special use by your firm. The flux capacitor, which has a MACRS 3-year recovery period, would be sold after 3 years for $30,000. Use of the equipment would require an increase in net working capital (spare parts inventory) of $4,000. The flux capacitor would have no effect on revenues, but it is expected to save the firm $25,000 per year in before-tax operating costs, mainly labor. The firm’s marginal tax rate is 40 percent. If the project’s cost of capital is 10 percent, should the flux capacitor be purchased?