CE 203 Civil Engineering Synthesis I

Chapter 5
PRESENT WORTH ANALYSIS

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March 7, 2007

Where we have been:

- Equivalence concept
- Cash flows
- Compound interest factors

Where we are going in this chapter:

- Understanding economic criteria
- Applying present worth techniques
- Assumptions in solving economic analysis problems

Assumptions in Solving Economic Analysis Problems

- Problems are complicated
- Need to make simplifying assumptions
- Common assumptions:
  - End-of-year convention (simplifies calculations)
  - Viewpoint (generally the firm)
  - Sunk costs (past has no bearing)
  - Stable rate of inflation
  - Income taxes are same for all alternatives

Economic Criteria Restated Present Worth Techniques

	Situation	*Criterion*
Fixed input	Amount of capital available fixed	Maximize present worth of benefits
Fixed output	$ amount of benefit is fixed	Maximize present worth of costs
Neither fixed	Neither capital nor $ benefits are fixed	Maximize net present worth (NPV)

Applying Present Worth Techniques

- Analysis period must be considered
  - Useful life of the alternative equals the analysis period
  - Alternatives have useful lives different from the analysis period
  - The analysis period is infinite, $n = \infty$, A = Pi

Example Problems