Excel Exercises

Cost-Benefit Analysis training workshop - Suva

January 24-27, 2012

Excel Exercises

- Understanding how to deal with a stream of future benefits and costs is extremely important for these Cost Benefit analyses.

- We'll walk through a few excel exercises that deal with these future benefits and costs and focus on a few important concepts such as: Discounting, Net Present Value, and Uncertainty

Excel Exercises

- **Exercise 1 and 2:** These exercises will walk you through how to calculate and then discount a stream of future benefits and costs.

- **Exercise 3:** This exercise will walk you through how to calculate net present value.

- **Exercise 4 and 5:** These exercises will address how to deal with uncertainty regarding our cost and benefit estimates.

Excel Exercises

Exercise 1 :

- Assume we have built 1 rainwater storage tank that provides storage capacity of $5m^3$.
- Assume this tank is filled by rainfall 1 time a year (this assumption is for educational purposes only) .

- **How do we determine the value of $5m^3$ in each year out to 2020?**
  - Determine the physical benefits of the water tank in each year
  - Apply a market price to the benefits of that water

Excel Exercises

Exercise 2:

- Are benefits tomorrow worth the same to you as benefits today?

- **How do we determine the value of 5m^3 in each year out to 2020?**
  - Determine the physical benefits of the water tank in each year
  - Apply a market price to the benefits of that water.
- **How do we discount the value of 5m^3 in each year to today?**
- **What is the present value of benefits of the water storage tank?**

Present Value = Future Value / ((1+r)^t)

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Exercise 3:

- Let's extend this to a case including costs.

- What is the present value of costs of the water storage tank?

- What is the **net** present value (NPV) of the water storage tank?
  - PV of benefits minus PV of costs

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Exercise 4:

- Suppose we are uncertain about the **value** of drinking water
- We believe it could vary between \$8 and \$18 per m^3

- **Is the storage tank still a good idea for this range?**

Excel Exercises

Exercise 5

- Suppose we are **also** uncertain about the **maintenance costs** of the storage tank
- It could involve up to 10 days of work a year

- **Is the storage tank still a good idea for these ranges?**