

Dealing w/ uncertainty: expected values, sensitivity analysis, and the value of information

Expected value: measure to take account of risks

Sensitivity analysis: investigate the robustness of NB estimates to different resolutions of uncertainty

Value of information: benefit category for CBA and guide for allocating analytical effort

11.1 Expected Value Analysis

11.1.1 Contingencies and their Probabilities

Contingencies must be exhaustive and mutually exclusive

11.1.2 Calculating the expected value of net benefits

Sum NB for all contingencies

Risk neutral: indifferent between amounts and lotteries w/ equal payoffs

Risk averse: prefers a certain amount

Risk seeking: prefers the lottery

expected values = certain amounts if averaging out over large populations/quantities

11.1.3 Decision Trees and Expected Net Benefits

Decision analysis → sequential or extended form game against nature

logical structure into a **decision tree**

11.2 Sensitivity analysis

base case

approaches:

- **Partial sensitivity analysis** → one variable
- **Worst and best case analysis** → range of values
- **Monte Carlo** → distribution of net benefits

11.3 Information and Quasi Option Value

11.3.1 Introduction to the value of information

11.3.2 Quasi-option value

Quasi-option value: expected value of information gained by delaying an irreversible decision

→ If this can be quantified, ENB can and should be calculated directly

exogenous learning: information is revealed regardless of action taken

endogenous learning: information is generated only from development itself

11.4 Conclusion