BENEFIT – COST ANALYSIS

MAP ESA UNGGUL UNIVERSITY
Lecturer: M.Cholifihani, MA, Ph.D
Sabtu, 18 Mei 2019

BENEFIT-COST ANALYSIS

- Analytical framework used to evaluate public expenditure decision
- Systematic enumeration of all benefits and all cost, tangible and intangible, quantifiable or difficult to measure.
- Prescriptive Model (instead of descriptive model)
- Ex ante Evaluation
- Aims to economic efficiency

The Procedure

- The projects to be analyzed are indentified
- All the impacts, both favorable and unfavorable, present and future, on all society are determined
- Values, Favorable impact as Benefits and unfavorable ones as costs
- The net benefits (total benefits minus total costs) is calculated
- The choice is made

Case 1: Accepting or Rejecting a Single Project

- Rehabilitate the office with energy efficiency
- Initial cost is estimated at $ 175.000
- Benefits from energy savings $ 150.000
- Maintenance cost will be reduced at $ 75.000
- The net benefits is : +$ 150.000 +$75.000 - $175.000 = $ 50.000
- The Authority must make a simple yes- no decision between rehabilitate the office getting net benefits $ 50.000 or no-rehabilitation with $ 0.00.

Case 2a: Choosing one of a Number of Discrete Alternative Projects

Headquarters	Initial Cost	Benefits (Thousands) Savings on energy cost	Savings on maint-cost	Total banefits	Net benefits	B/C Ratio
A	$100	$100	$500	$600	$500	6,00
B	$500	$400	$850	$1.250	$750	2,50
C	$200	$200	$600	$800	$600	4,00
D	$75	$25	$150	$175	$100	2,33
E	$150	$50	$325	$375	$225	2,50
F	$200	$150	$250	$400	$200	2,00
G	$50	$75	$100	$175	$125	3,50
H	$150	$175	$275	$450	$300	3,00

Case 2b: Choosing the Appropriate Scale for A Project

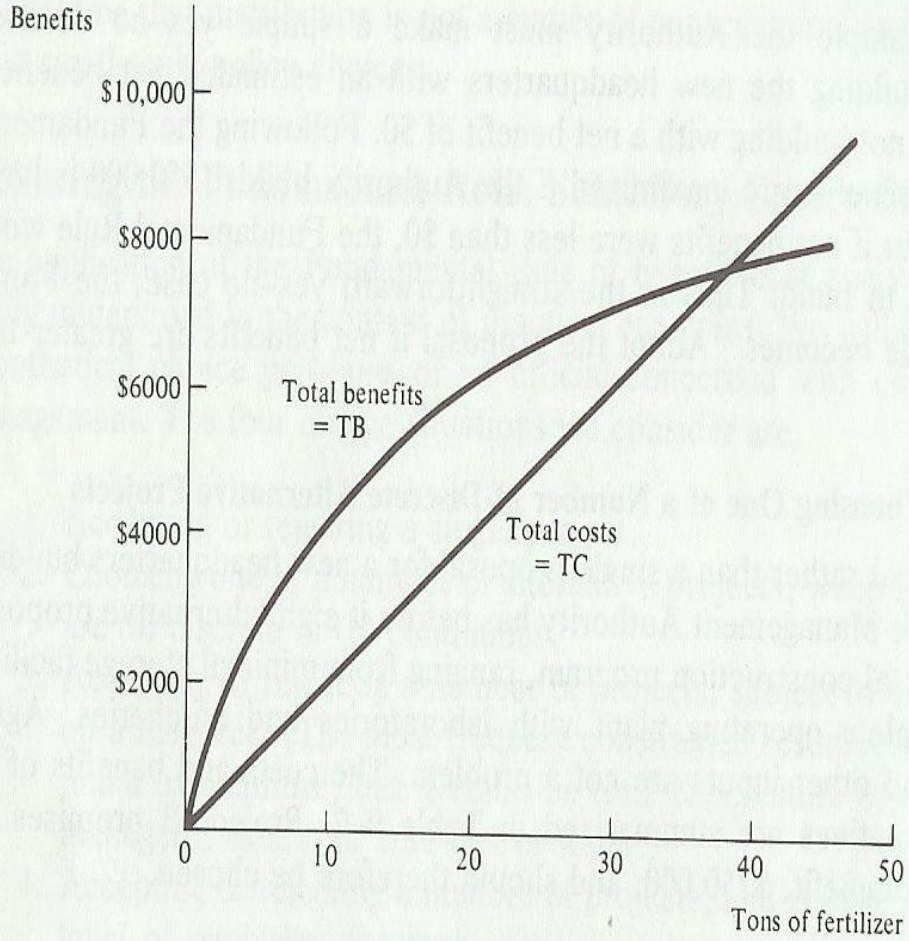

Fig. 9–1

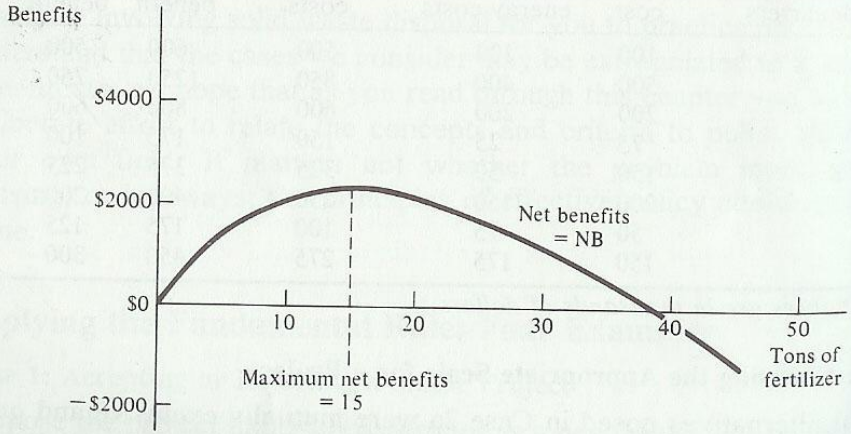

Fig. 9–2

Case 3: Accepting or Rejecting a number of Projects, Subject to a Constraint on a Resources

(in thousands of dollars)

Headquarters	Initial Cost	Net Benefit	Net benefit/ initial cost	Cumulative initial cost, all projects
A	100	500	5,0	100
C	200	600	3,0	300
G	50	125	2,5	350
H	150	300	2,0	500
E	150	225	1,5	650
B	500	750	1,5	1150
D	75	100	1,3	1225
F	200	200	1,0	1425

Case 3: Accepting or Rejecting a number of Projects, Subject to a Constraint on a Resources

- Capital is limited to $ 500.000
- Thre are many possibilities
- Rank the projects according to the index
- Then select projects from the top of the list down, until the $ 500.000 is used up
- Then the selected projects are A, C, G, and H due to exhausting the $500.000 budget (total net benefit is $ 1.525.000)
- If we choose project B, just only one project and the total benefit just $ 750.000 with the initial cost $500.000

Benefit/Cost Ratios

- A project will be recommended if B/C ratio is greater than 1 or rejected because the ratio less than 1.
- The largest B/C ratio among competing projects
- When mutually exclusive projects or when resources are constrained, the two criteria may lead into inconsistent choices.

Benefit/Cost Ratios

Project	Benefit	Costs	Net Benefits	B/C Ratio
I	$10,000	$1,000	$9,000	10
II	$100,000	$25,000	$75,000	4

Estimating Benefits and Costs

- Prediction : predict input that will be employed and the outputs that will be achieved
  all impacts, favorable and unfavorable, must be identified
- Valuation : Unfavorable impacts will be registered as cost, favorable ones as benefits
  The usual measuring rod is money-unit,dollars
  Market values VS No Market values (relative prices in the economy)
- Willingness to pay (appropriate measure of Benefits)- Eq. Parking fee VS Parking space

Cost Effectiveness

- Calculating cost is easier to quantify than the benefits
- Benefits and costs are hard to compare directly (defence or health projects)
- Opportunity cost

Example

- Apply benefit-cost analysis to a case study of U.S. and European efforts to save lives gasoline by setting maximum speed limits

Conducting a Benefit-Cost Analysis

- Identify alternatives
- Specify objectives
- Identify target groups and beneficiaries
- List all benefits and costs
- Collect data for analysis
- Discount benefits and costs to present value
- Select criterion of choice
- Compare benefits and costs
- Make recommendation

Benefits and Costs of the 55 mph Speed Limit

COSTS

- Hours Driving

  $H = [1.04VM_{1973}/S_{1974} - VM_{1973}/S_{1973}] \times R$

  $= 1.95$ billion

  $H = [VM_{1973}/S_{1974} - VM_{1973}/S_{1973}] \times R$

  $= 1.72$ billion
- Value of Hours

  \$5.05/hr (average wage) = \$9.85 billion

  \$1.67/hr (survey) = \$2.89 billion

- Costs of Enforcement

  $.8 million

  $12 million

BENEFITS

- Gasoline Saved

  $0.718 cents (price support) = $2,500 billion

  $0.528 cents (market price) = $1,442 million

- Lives saved
  $1,297.7 million
  $998 million
- Injuries
  $942.3 million
  $722 million
- Property damage
  $472 million
  $236 million

A Net Benefits = $2,321.2 B/C = 1.8

B Net Benefits = - $6,462 B/C = .345

- TERIMA KASIH