Administrative Decentralization and Management for Myanmar: Expenditure Prioritization and Cost-Benefit Analysis (Part 2)

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Session Roadmap: Cost-Benefit Analysis

- Public policy objectives (first session)
- Positive and normative analysis (first session)
- Overall strategy assessment (first session)
- Pre-expenditure assessment: cost-benefit analysis
  - Purpose of cost-benefit analysis
  - Cost-benefit criterion (decision rule) for funding projects
  - Difference between private and social cost-benefit analysis
  - Key issues in measuring project benefits
- Post-expenditure assessment (tomorrow)

Purpose and Primary Criterion of Cost-Benefit Analysis

- Purpose: pre-investment tool for the government to determine whether to fund a specific project
- Criterion:
  - A project should be undertaken if its total benefits exceed total costs (if the cost-benefit ratio exceeds unity)
  - If the government must choose one from among a set of projects, it should choose the project with the highest net benefits (not the highest cost-benefit ratio)
  - Based on the principle of rational decisionmaking
  - Theory vs. practice (difficult to implement)

Difference Between Private and Social Cost-Benefit Analysis

- Social cost-benefit analysis takes into account a wider range of impacts, not just profits

- In social cost-benefit analysis, market prices may not exist for many costs and benefits, and if they exist, they might have to be adjusted to shadow prices because of market failures (might not reflect marginal social costs and benefits):
  - Labor: Shadow wage < market wage when there is unemployment (no loss in output elsewhere when an individual is hired)
  - Capital: Shadow interest rate > market interest rate when there is rationing in capital markets (greater opportunity cost of funds)
  - Steel: Shadow price of production > market cost (if pollution)

Key Issues in Measuring Project Benefits

- Measuring consumer surplus
- Measuring non-pecuniary benefits (time, life, environment)
- Valuing marketed goods in the presence of market failure (using shadow prices to measure marginal socials costs when market prices to not accurately measure it)
- Valuing consumption (output) at different dates (choosing the right discount rate/time value of money)
- Valuing risk (use of certainty equivalents and risk premiums)
- Valuing distributional considerations (comparing impacts on different groups, use of distributional weights)

Examples of Cost-Benefit Analysis

TABLE 11.1

- Hypothetical Calculation of Profitability for a Five-Year Steel Mill

YEAR	BENEFITS (RECEIPTS)	COSTS	NET PROFITS	DISCOUNT FACTOR	NET DISCOUNTED PROFITS
1		3000	-3000	1	-3000
2	1200	200	1000	$1/1.1 = .909$	909
3	1200	200	1000	$1/(1.1)^2 = .826$	826
4	1200	200	1000	$1/(1.1)^3 = .751$	751
5	1200	200	1000	$1/(1.1)^4 = .683$	683
Total	4800	3800	1000		169

TABLE 11.3

- Example of Cost-Benefit Analysis for Risky Investment

YEAR	EXPECTED NET BENEFIT	CERTAINTY EQUIVALENT NET BENEFIT	TIME DISCOUNT FACTOR (10 PERCENT INTEREST RATE)	DISCOUNTED VALUE OF CERTAINTY EQUIVALENT NET BENEFIT
1	$-100	$-100	1	$-100
2	100	90	.91	81.90
3	100	80	.83	66.40
4	100	75	.75	56.25
5	-50	-75	.68	-51
Total	150	70		53.55