

Public Policy Management: W16. Cost-Benefit Analysis

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| Week | Main Topics | Key words |
|------|--|-----------------------------------|
| 10 | How Policy Makes Politics | nexus of policy and politics |
| 11 | Evidence-Based Policymaking | Evidence, research |
| 12 | Policy implementation | bureaucracy, Government officials |
| 13 | Evaluation of public policy | Goals, attainment |
| 14 | Public Policy Analysis | policy content analysis |
| 15 | Public Policy Analysis: Stakeholder Analysis | who, what and how |
| 16 | Public Policy Analysis: Cost- Benefit Analysis | costs, benefits, returns |

Recap of Previous weeks

- How Policy Makes Politics
- Evidence-Based Policymaking
- Policy implementation
- Evaluation of public policy
- Public Policy Analysis
- Public Policy Analysis: Stakeholder Analysis
- Week 16 : Cost benefit Analysis

Outline of Week16: Cost Benefit Analysis

- Setting the Context
- What is CBA?
- What more is required to do CBA?
- Enumerating Benefits and Costs
- Challenges of enumerating the costs and benefits
- Evaluating Benefits and Costs
- Discounting Future Net Benefits
- Discount Rate and Project Rankings
- Some examples

Setting the Context

- A. Nature of issue: 1. Affects politicking and 2. Affects intensity of political conflict
- B. Costs and benefits of proposed policy a way to understand how issue affects political power
 - 1. Cost: any burden, monetary or nonmonetary
 - 2. Benefit: any satisfaction, monetary or nonmonetary
 - 3. Two aspects of costs and benefits important:
 - a) Perception affects politics
 - b) People consider whether it is legitimate for a group to benefit

Setting the Context

- 4. Politics a process of settling disputes about who benefits and who ought to benefit
- 5. People prefer programs that provide benefits at low cost
- 6. Perceived distribution of costs and benefits shapes the kinds of political coalitions that form but not who wins.

What is CBA?

- A technique for determining the relative merits of alternative government projects over time.
- Use of CBA can contribute to efficiency by making sure that new projects for which marginal social cost exceeds marginal social benefit are not considered for approval.
- CBA, if done well, provides essential information to be used by government authorities and citizens in making choices among alternative government projects.
- Cost-benefit analysis is an old tool; Used in USA since 1900 by the Army Corps of Engineers to evaluate the desirability of alternative water resource projects.

What is CBA?

- Simply, CBA is a statement of the pros and cons of a particular activity over a period of time.
- It involves a very systematic way of gathering information.
- CBA is now applied to new social regulations dealing with products, job safety, and environmental protection.

Three Steps of CBA

- 1. Enumerate all costs and benefits of the proposed project.
- 2. Evaluate all costs and benefits in dollar terms.
- 3. Discount future net benefits.
- Although looks simple, a good CBA demands a great deal of originality.
- Requires the combined talents of economists, engineers, and scientists to correctly enumerate and evaluate costs and benefits.



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What more is required to do CBA?

- Benefits must include all indirect effects (externalities) generated by the project.
- Costs must be defined correctly as alternative benefits forgone if the project is adopted (the opportunity cost).
- An appropriate discount rate must be chosen to compare present and future returns from alternative projects.

Enumerating Benefits and Costs

- The preliminary step is to define both the project under consideration and its output.
- Once this is done, the analysts can proceed to enumerate the costs incurred and the benefits generated over the life of the project.
- Benefits can be divided into two categories: direct and indirect.
- Direct benefits are those increases in output or productivity attributable to the purpose of the project.
- For example, in an irrigation project, the purpose is to increase the fertility of a particular tract of land.

Enumerating Benefits and Costs

- The direct benefits in this case will be the net increase over time in agricultural output on the tract of land being irrigated.
- Indirect, or spillover, benefits are those accruing to individuals not directly associated with the purpose of the project.
- In an irrigation project, spillover benefits might include the improved fertility of adjoining land that is not actually irrigated by the scheme that results from changes in the height of the water table in the area.
- In enumerating benefits, only real increases in output and welfare are considered.
- Care must be exercised not to double-count benefits of a particular project.

Enumerating Benefits and Costs

- For example, agricultural land values are likely to increase as a result of an irrigation project.
- However, such appreciation merely reflects the increased output potential of the land.
- Counting the increase in land value along with the value of the increase in agricultural output results in double-counting the benefits of the project.
- Unfortunately, this is not always understood by those undertaking CBA and double-counting does occur.

Challenges of enumerating the costs and benefits

- Another problem is the definition of indirect, or spillover, effects of a project.
- For example, retailers will sell more goods in a region where incomes rise as a result of a government project.
- In a full employment economy, these extra retail sales and profits merely reflect changes in the distribution of income as a result of the project.
- That is, they reflect increases in income to owners of resources, attracted from alternative uses rather than from increases in output.

Challenges of enumerating the costs and benefits

- The increase in retail sales in the area that benefits from the project is balanced by a reduction in retail sales elsewhere, because the taxes to finance the project reduce incomes elsewhere.
- The practice of counting extra profits of third parties has been common in some cost-benefit analyses of irrigation projects.
- In these cases, the profits of businesses that process the increased agricultural outputs, as well as the profits of firms that supply goods to farmers, have been included in the enumeration of benefits.

Challenges of enumerating the costs and benefits

- For some projects, enumeration of benefits is difficult. How are the benefits of an education program or a health program defined?
- Again, the answer must yield a quantifiable result that avoids double-counting.
- In a particular vocational education program, benefits might include the increased output as reflected in the higher earnings of those who attain new skills as a result of the program.
- In an accident prevention project, benefits might include the increased output that results from reduced injuries and fatalities.

Challenges of enumerating the costs and benefits

- In enumerating costs of a project, listing direct resource costs gives only a partial account of real costs when external costs also will occur.
- Any costs not reflected in the prices of inputs must be included.
- Suppose, for example, that a new project in a given area will have the effect of reducing water resources available to nearby agricultural land.
- The corresponding reduction in agricultural output must be included as a cost of the project.

Evaluating Benefits and Costs

- After all costs and benefits have been satisfactorily enumerated, the next step is to evaluate these costs and benefits in dollar terms.
- Valuing output requires an estimate of the demand for increased production and calculation of consumer surplus.
- When the outputs of particular programs are not sold in markets, the problem of valuation is difficult.
- Surrogate measures of the willingness of beneficiaries to pay for outputs that are not sold must be obtained.

Evaluating Benefits and Costs

- For example, although the benefits of many public health programs are consumed collectively, the value of these benefits might be reflected in increased earnings of those whose health is improved by the project.
- An estimate of such increased earnings over time can be a good reflection of the value of the benefits for the project.
- Similarly, the benefits of an education program might be measured by an estimate of the increased earnings accruing over time to former students.

Evaluating Benefits and Costs

- An additional problem occurs with outputs and inputs that are marketable but have prices that do not reflect their true social value.
- This results when any output attributable to a project is sold in monopolistic markets, when external effects are generated by production of the output, or when distortions due to subsidies or taxes are present.
- Under such conditions, prices must be adjusted to reflect the actual marginal social cost or benefit.

Evaluating Benefits and Costs

- For example, if the prices of increased agricultural outputs of an irrigation project reflect the price supports of PNG agricultural policy, then the prices must be adjusted downward to reflect the actual marginal social benefit of the output to consumers.
- The elimination of such price distortions might require some arbitrary estimating decisions by the analysts.
- If the prices of inputs used are distorted upward from actual marginal social cost by the monopolistic power of sellers, then a downward adjustment must be made in the input prices.

Discounting Future Net Benefits

- The next step after enumerating and evaluating costs and benefits is to discount all future net benefits.
- The choice of an appropriate discount rate is of crucial importance here.
- The need to discount stems from the existence of positive interest rates.
- Positive interest rates imply that a dollar of benefits in the future will be worth less than an equivalent dollar of present benefits, because it takes less than today to produce a dollar of resources tomorrow (say, one year from today), when interest rates are positive.

Discounting Future Net Benefits

- For example, if the interest rate is 5 percent per year, then only K95.24 needs to be invested today to obtain K100 one year from today.
- That is to say, K100 received one year from today is worth only K95.24 today.
- The K95.24 is called the present value (PV) of K100 to be received in one year.
- At the end of the year, K95.24 will be equal to $K95.24 (0.05)(K95.24) K100$.

Discounting Future Net Benefits

- In general, the present value of X dollars to be received n years from now at simple interest rate r is obtained by solving the equation $X = PV (1+ r)^n$.
- $PV = X / (1+ r)^n$ -----(6.5)
- The higher the interest rate used to discount a certain amount of future income X, the lower the present value of X.
- The interest r, called the **social rate of discount**, is used to compute the present value of X.
- If a particular project yields benefits over a number of years, the net benefits, X_i , per year must be discounted in each year as follows:

Discounting Future Net Benefits

$$\bullet \text{ PV} = \sum_{i=1}^n X / (1+r)^i \quad \text{-----(6.6)}$$

• For example, if a project yields X_1 dollars in net benefits after the first year and X_2 dollars after the second year, its present value is

$$\bullet \text{ PV} = X_1 / (1+r)^1 + X_2 / (1+r)^2 \quad \text{-----(6.7)}$$

How the Discount Rate Affects the Present Value of Projects ?

- Why is the choice of an appropriate discount rate important? First, it is no more important than the proper enumeration and evaluation of costs and benefits.
- An analysis that uses the correct discount rate but seriously miscalculates costs and benefits will produce results as misleading as a study that uses a zero discount rate.
- All phases of cost-benefit analysis are equally important if such studies are to yield useful information.
- However, the choice of the discount rate affects the ranking of alternative projects and the number of projects that can be approved.

Discount Rate and Project Rankings

| DISCOUNT RATE | PRESENT VALUE OF PROJECT 1 | PRESENT VALUE OF PROJECT 2 |
|---------------|----------------------------|-----------------------------|
| 0% | K90 | $K100 / (1+0)^2 = K100$ |
| 5 | 90 | $K100 / (1+0.05)^2 = K90.7$ |
| 10 | 90 | $K100 / (1+0.1)^2 = K82.6$ |

Discount Rate and Project Rankings

- A low discount rate tends to favor projects that yield net benefits further into the future relative to projects that yield current net benefits.
- An arithmetical example illustrates this effect. Consider two alternative projects.
- Project 1 yields K90 in net benefits immediately. Project 2 yields K100 two years after it is undertaken but nothing at present or after one year.
- The present values of net benefits from these two projects can be calculated with a variety of discount rates and then ranked according to their present values.

Discount Rate and Project Rankings

- Consider three alternative discount rates: 0 percent, 5 percent, and 10 percent. The present value of project 1 is always K90 because it yields only present net benefits.
- The present value of project 2 will vary with the discount rate. Table in the above slide gives the present values of net benefits for project 2 under the alternative discount rates.
- As shown in the table, the present value of project 2 is greater than that of project 1 under a discount rate of 0 percent and 5 percent.
- But if a discount rate of 10 percent is chosen, the result is such that project 1 is ranked above project 2. In general, the higher the discount rate, the less is the weight given to the value of future net benefits.

Discount Rate and Project Rankings

- Furthermore, higher discount rates result in fewer government projects that can be approved.
- Insofar as the discount rate reflects the return to private consumption and investment, a higher rate implies that the opportunity cost of government expenditure in terms of private satisfaction forgone is greater.
- This, in turn, implies that efficiency requires a relatively smaller amount of government expenditure as a percentage of gross domestic product (GDP).
- Some projects that yield a positive value for the present value of net benefits under low discount rates will have negative net present benefits at higher discount rates.

Choosing the Social Rate of Discount

- The social rate of discount should reflect the return that can be earned on resources employed in alternative private use.
- This is the opportunity cost of funds invested by the government in a project.
- To avoid losses in well-being, resources should not be transferred from the private sector to government use if those resources can earn a higher social return in the private sector.
- Setting the discount rate equal to the social opportunity cost of funds ensures that misallocations do not occur.

Choosing the Social Rate of Discount

- The social opportunity cost depends on the rate at which savers and investors are willing to give up either consumption or investment to finance the government project.
- For example, if the rate of interest in the economy is 10 percent, a government project must yield at least that much to justify the transfer of funds from private to government use.
- Because of the existence of distortions (the corporate income tax, for example), the net return that savers can earn often is different from that earned by investors.

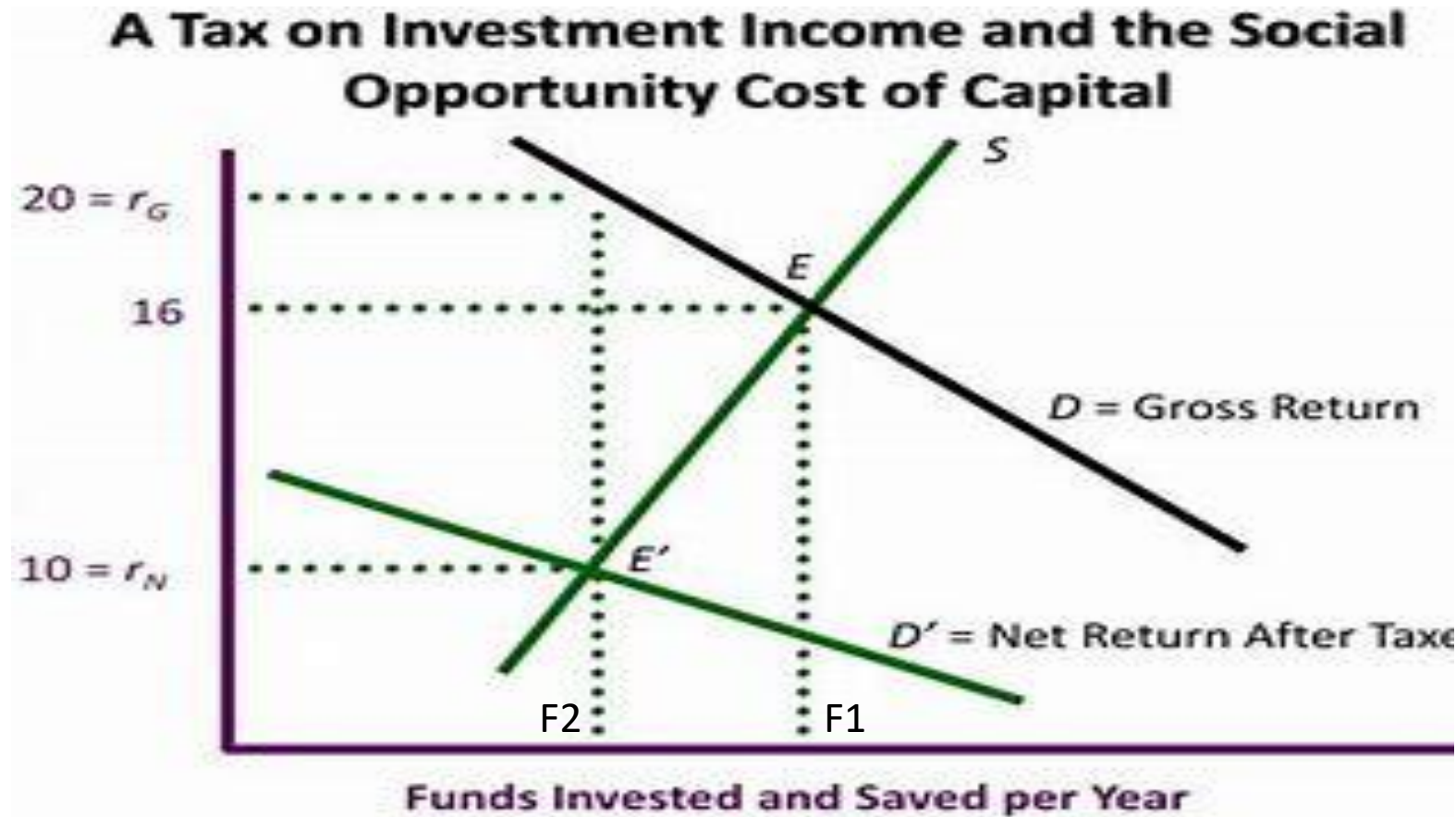
Choosing the Social Rate of Discount

- For example, with a 50 percent tax on corporate profits, the return to investments in the corporate sector of the economy is only one-half of the actual gross percentage rate of return.
- If investors must pay 10 percent interest to borrow funds, they will require a return in excess of 20 percent to undertake any project.
- A gross return greater than 20 percent is necessary to earn a positive net return after paying 10 percent interest.
- The existence of such taxes causes investors and savers to adjust to different interest rates.

Fig: Tax on investment income and social opportunity cost

- This is illustrated in Figure 6.2.
- The curve D represents the demand for funds for investment in the absence of any taxes.
- Points on this curve give the gross return to investors for any quantity of funds invested per year.
- S is the supply curve of investible funds. It gives the rate that would have to be paid to savers to induce them to supply any given amount of funds per year.
- In the absence of any taxes, the market equilibrium would be at point E. The gross return to investors, r_G , would equal the interest rate paid to savers. Suppose this rate is 16 percent.

Fig: 6.2- Tax on investment income and social opportunity cost



<http://mizu.lecture.ub.ac.id/files/2015/10/9.-Cost-Benefit.pdf>

Fig: 6.2- Tax on investment income and social opportunity cost

- Now suppose that investors are subject to a 50 percent tax on the return to investment but that the interest earned by savers is not subject to taxation.
- The tax causes the net return to investors to fall short of the gross return by a factor of 50 percent.
- In Figure 6.2, this is represented by a downward shift of the investment demand curve from D to D' .
- Investors now make their decisions according to points on D' , which give the net return to investment after the 50 percent is paid. The new market equilibrium corresponds to point E' .

Fig: 6.2- Tax on investment income and social opportunity cost

- As the amount of funds invested declines from $F1$ dollars to $F2$ dollars per year, the gross return rises to rG 20 percent. However, the net return after payment of the tax is only rN 10 percent.
- The net rate of return is also the market rate of interest necessary to induce savers to supply $F2$ dollars per year for investors to use.
- If the funds used to finance the project displace investment, the appropriate discount rate is 20 percent.
- If, however, they displace consumption, the opportunity cost is only the 10 percent that those funds could have earned had they been saved.

Fig: 6.2- Tax on investment income and social opportunity cost

- An ideal technique for determining the social rate of discount is to ascertain the kind of private expenditures that are displaced by a government activity and to use an average of the return on displaced expenditures.
- However, such an estimate of the distribution of expenditure displaced may be difficult to obtain.
- From a pragmatic point of view, it is often convenient to estimate the social rate of discount by considering a variety of factors.
- These factors include the riskiness of displaced investment and taxes.

Fig: 6.2- Tax on investment income and social opportunity cost

- For example, if risk and other complications are ignored, assume that the market rate of interest would be 10 percent. With a 50 percent tax on business profits, the gross actual return on business investment must be 20 percent before taxes, as shown in Figure 6.2.
- This results in a net return after taxes of 10 percent. The opportunity cost of displaced business investment therefore will be 20 percent.
- Similarly, risk and inflation often result in higher returns on private investment.
- If higher returns are required on private investment in equilibrium to compensate investors for risk and expected inflation, then these must be added into the opportunity cost of government use of those displaced funds.

Weighting and Disaggregating Net Benefits

- Cost-benefit analysis is a tool designed primarily to aid in choosing government projects that are efficient.
- However, some practitioners attempt to modify its techniques to build in equity as well as efficiency criteria in ranking projects.
- The effects of a given project on the distribution of income can be built in by weighting the costs or benefits according to whom or where they accrue.
- This technique would disaggregate both benefits and costs according to income of recipients and also would weight those benefits and costs borne by low-income groups relatively.

Weighting and Disaggregating Net Benefits

- A variant of the weighting of benefits according to income of recipients is to weight net benefits according to their regional location.
- Many argue that a legitimate function of government is to base decisions on which public expenditures to undertake according to the region in which benefits and costs would flow and that the higher weight should be placed on benefits and costs in depressed or declining regions.

Weighting and Disaggregating Net Benefits

- Attempts to formalize distributional considerations through weighting of benefits and costs might not be in accord with the distributional goals of all citizens.
- For this reason, formal weighting of benefits and costs might serve only to confound the distribution and efficiency aspects of projects by confusing net increases in welfare with their distribution.
- Separate consideration of efficiency and distributive consequences allows the trade-offs between net benefits and their distribution to be more clearly seen.

Weighting and Disaggregating Net Benefits

- Another proposal that would allow cost-benefit analysis to take into account distributional considerations is to disaggregate benefits according to demographic, income, and other social characteristics of the citizens who will receive benefits and bear the costs.
- This avoids the problem of how to weight benefits and provides direct information on the distribution of costs and benefits among citizens.

Weighting and Disaggregating Net Benefits

- Insofar as this provides information on the distribution of marginal benefits of increased government expenditure and on the manner in which costs are distributed among citizens, it allows both citizens and their political representatives to vote on a more informed basis.

Treatment of Inflation

- Inflation creates a problem in cost-benefit analysis by making the measuring rod of money a poor standard for comparing benefits over time.
- There are two alternative ways of dealing with the problem of inflation.
- First, both benefits and costs could be measured through time in nominal values by estimating the rate of inflation over time and inflating both future benefits and costs accordingly.
- If this is done, the analyst must take care to use the nominal interest rate as well in discounting future net benefits.

Treatment of Inflation

- The nominal interest rate is the sum of the real interest rate and the rate of inflation.
- If inflated values of net benefits are used, they must, in turn, be deflated by the nominal interest rate to account for the inflation.
- Similarly, if benefits and costs are measured over time in real terms, meaning that future benefits and costs are deflated, then one also must use the real interest rate (the nominal interest rate less the rate of inflation) to discount future benefits and costs.

Ranking Projects

- Projects are usually ranked according to the present value of their discounted net benefits ($B - C$) or according to the ratio of the present value of benefits to the present value of costs.
- All projects with positive net benefits are considered for approval.
- Similarly, all projects with benefit-cost ratios in excess of a value of 1 are considered for approval.
- These two criteria are shown inequations 6.8 and 6.9.

Ranking Projects

$$\text{Net Benefit Criterion: } B - C = \sum_{i=1}^n (B_i - C_i) / (1 + r)^i \quad \text{-----(6.8)}$$

- Benefit–Cost Ratio: $B / C =$

$$\sum_{i=1}^n [B_i / (1 + r)^i] / [C_i / (1 + r)^i] \quad \text{-----(6.9)}$$

- where B_i are benefits in year i , C_i are costs in year i , n is the life of a project, and r is the discount rate

Ranking Projects

- Use of these rules can ensure that inefficient projects will not be considered for approval. In any given year for any agency, a certain level of service has already been provided.
- It is difficult to determine whether this level of service is the efficient amount. For example, in a given year, a certain amount of interstate highways exists.
- Proposed projects for new highway construction represent additional units of this transportation service.
- The new highway construction will improve efficiency only if its marginal social benefit exceeds its marginal social cost.
- Projects are ranked according to the net social gain they provide.

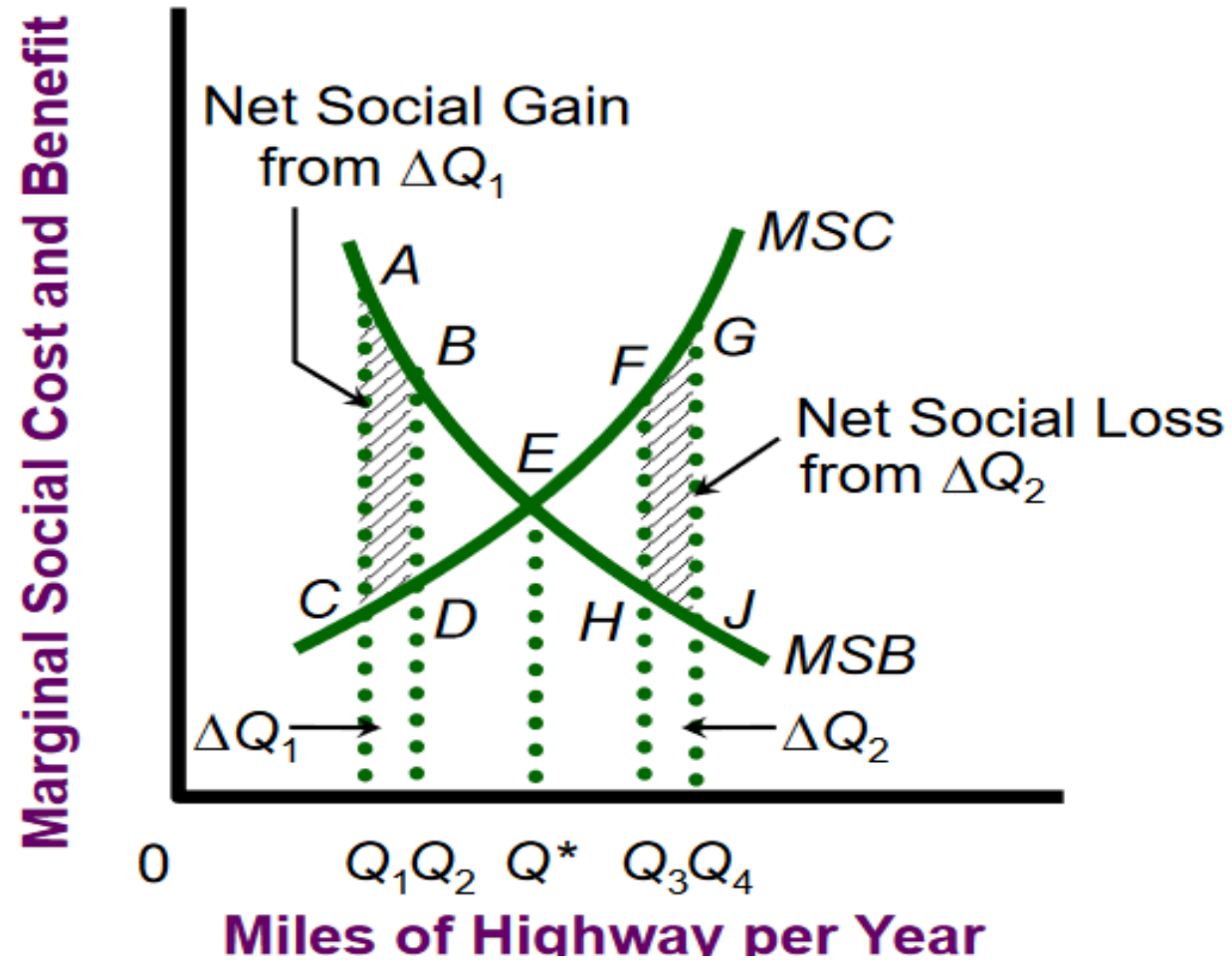
Fig 6.3: Marginal social benefit and marginal social cost

- Figure 6.3 shows the marginal social benefit and marginal social cost of highways, measured in miles available each year.
- Suppose the amount of highway mileage currently existing is Q_1 miles of four-lane, limited-access roads. A new project is proposed that will increase road mileage to Q_2 .
- The project will add an additional Q_1 miles of road to available highways. Suppose that a cost-benefit analysis of the project finds that the Q_1 miles has a positive net benefit (or a benefit-cost ratio greater than 1).

Fig 6.3: Marginal social benefit and marginal social cost

- This would imply that the area Q_1ABQ_2 , representing the marginal social benefit of the project, would exceed the area Q_1CDQ_2 , which represents the marginal social cost of the extra highway miles.
- Approval of the project moves output closer to the efficient level Q^* , at which $MSB = MSC$.

Figure 6.3 Cost-Benefit Analysis and Efficiency



<http://mizu.lecture.ub.ac.id/files/2015/10/9.-Cost-Benefit.pdf>

Fig 6.3: Marginal social benefit and marginal social cost

- Suppose instead that Q_3 miles of highways already exist.
- If proposals to increase miles available to Q_4 are made, the increment in roads supplied, Q_2 , will be inefficient, because the marginal social cost of Q_2 miles of road, Q_3FGQ_4 , exceeds the marginal social benefit of Q_3HJQ_4 .
- This is because at an output of Q_3 , more than the efficient amount of roads, Q^* , exists.
- A correctly executed cost-benefit analysis of the project resulting in Q_2 units of road should reveal a negative net benefit or a benefit-cost ratio less than 1.

Application of CBA in Public Policy: Examples

- Infrastructure Analysis
 - Roads
 - Bridges
 - Dams
 - Levies

Govt. Infrastructure Investment in LDC's

- LDC's have invested considerable sums in agricultural infrastructure because of a 17% estimated project rate of return.
 - Projects (such as the creation of large water reservoirs) typically displace locals and these costs must also be accounted for.
 - Projects have been shown to help the poor by adding substantially to their ability to produce crops for sale.

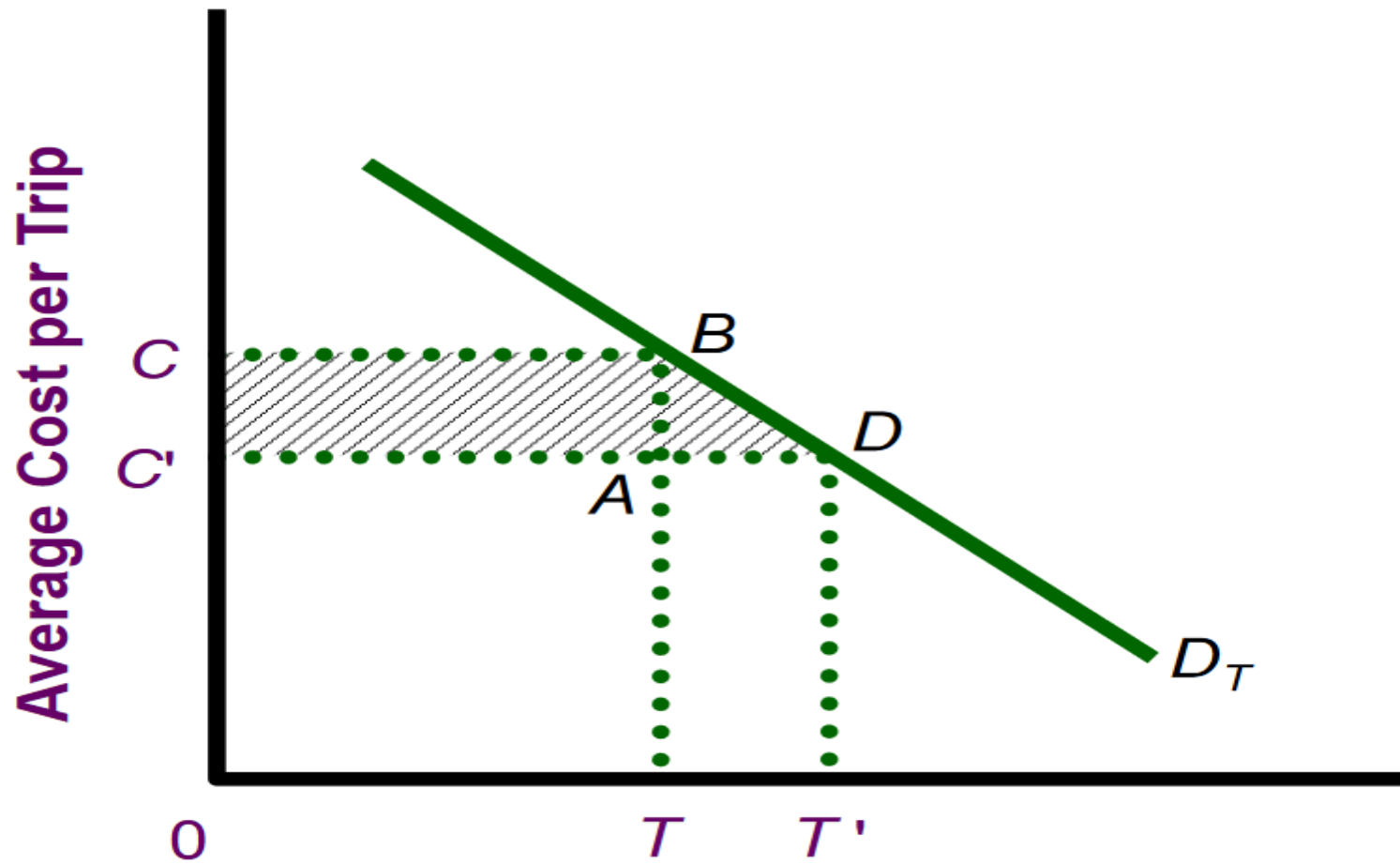
Transportation: Widening an Existing Highway

- To evaluate the benefits of adding two more lanes to a highway, an estimate must be made of the demand for travel between the points involved as a function of the average cost per trip. The average cost per trip includes fuel, depreciation, vehicle maintenance, and, most important, the value of time involved.
- Improvement of the facility makes trips between two points faster. This will result in cost savings to existing users and will encourage new users to take trips on the road.
- The major benefit of the improved facility will be the cost saving on existing trips plus the net benefits on new trips along the improved route.
- Assuming enough information is available, these benefits can be estimated from the demand for travel between the points involved.
- This is illustrated in Figure 6.4. D_T is the demand for travel. The current average cost of travel per trip for points served by the existing road is C , and the current number of trips per year is measured as T .

Transportation: Widening an Existing Highway

- Widening the facility is estimated to lower the average cost of a trip to C and increase the number of trips per year to T .
- The annual cost saving on existing trips is CC multiplied by T , or the area $CBAC'$. The net increase in trips is TT' .
- The cost of making these new trips is, on average, CC' . The net benefits on new trips is additional consumer surplus over and above the cost of making the new trips.
- This is the area ABD . The net benefits from widening the road are the sum of the two areas, $CBAC'$ and ABD .

Figure 6.4 The Benefits of Widening a Highway



<http://mizu.lecture.ub.ac.id/files/2015/10/9.-Cost-Benefit.pdf>

Transportation: Widening an Existing Highway

- The total benefit is the reduction in the cost of T trips per year to existing users plus the benefits of additional trips by new users. This is the sum of the areas $CBAC'$ and ABD .
- Cost of the project would include all labor, capital, and land costs to construct the new facility, as well as maintenance costs over the life of the facility after construction is completed.
- Additional costs would include damage and injuries, including possible fatalities caused by hazards during the construction period.
- Losses from slowdowns in traffic and congestion during construction are also part of the costs of the project.

Transportation: Widening an Existing Highway

- Any external costs, such as destruction of wilderness or increased pollution due to the increased traffic generated on the road (less any pollution reduction elsewhere if some of the new traffic previously used alternative routes), would have to be included as a real cost of the project.
- After all such costs are estimated over time, a tableau to be constructed, giving the flow of both costs and benefits over the life of the project.
- Both benefits and costs could then be discounted, and the present value of net benefits, or a benefit-cost ratio, could be calculated to evaluate the project.

The Role of Cost-Benefit Analysis in Budgeting

- Useful tool to policy makers attempting to quantify decision making.
 - Some social benefits are difficult to quantify.
 - The distribution of benefits plays a role in the political output of which programs are funded.

CBA in Education or Returns to Education

- Enhanced over time by advances in knowledge
- Stock of human capital has been increasing at a higher rates than that of physical capital
- Stock of knowledge is *not embodied* in physical capital
 - Neither be identified or measured

Internal Rate of Return in Education

- Rate of discount which equates the sum of present value of benefits to the sum of the present value of costs of education
- Alternative method – regressing natural logarithm of earnings on schooling
- Resulting co-efficient on schooling – rate of return to education

Adjustments to be made for the Assumptions

- Adjustment for ability
- Adjustment for growth in incomes
- Adjustment for Wastage and stagnation in education
- Adjustment for unemployment
- Adjustment for non-participation in the labour force
- Adjustment for mortality

Limitations

- Assumes stability in the wage rate throughout the life cycle
- Based on average earnings and costs
- Strongly influenced by the length of studies and in practice
- Considerable variation in rates of return for different fields of study or particular social groups

Limitations

- Likely to be biased upwards as unemployment, retirement and early retirement benefits not considered
- Non-economic / monetary benefits – because of difficulties in identification and measurement

Policy Implications

- 1950s – prescriptive
- Indicator – productivity of education
- Suggesting areas of concentration- intra-sectoral allocation
- Guiding macro policy decisions about financing education reforms –
WB

Reference:

- David N. Hyman (2010), Chapter 6: Cost-Benefit Analysis and Government Investments, Pp 233 – 243, in 'Public Finance: A Contemporary Application of Theory to Policy', Tenth Edition, South-Western Cengage Learning, Ohio, USA.

- End of the course on Public Policy Management