CHAPTER 16

Cost-Benefit Analysis

Much of this book has been concerned with the process through which policies are adopted and with the characteristics of policies adopted in the United States. This chapter extends that discussion to examination of the principal method of policy analysis used when making policy choices, cost-benefit analysis. Because governments operate with limited resources and limited ability to predict the future, they must employ some techniques to help them decide how to utilize those scarce resources. Cost-benefit analysis is the most commonly employed technique, other than the informal promptings of intuition and experience. The fundamental principle of cost-benefit analysis is that any project undertaken should produce a benefit for society greater than its cost. Second, when several projects promise to yield positive net benefits and when all cannot be undertaken because of limited resources, the project that creates the greatest net benefit to the society should be selected. This technique is perhaps most applicable to capital projects, such as building highways or dams, but it can also be applied to other types of public programs. In fact, cost-benefit analysis was adopted as a means of assessing all proposed regulations during the Reagan administration, in an attempt to curb the growth of government involvement in the economy.

Obviously there is a decided utilitarian bias underlying cost-benefit analysis. The costs and benefits of a project are all compared along the single measuring rod of money, and those that create the greatest net benefit are deemed superior. This implies that the dominant value in society is economic wealth and, further, that more is always better. Total wealth is presumed to be of paramount importance, even if rather perverse distributional consequences arise from the program. I discuss the philosophical and practical issues that arise with cost-benefit analysis later in the chapter; its implications may be sufficiently troubling, especially in a democratic political system, for some critics to argue for alternative means of evaluating policies. But cost-benefit analysis does have the advantage of reducing all the costs
and benefits of public programs to that single economic dimension, whereas other forms of analysis may produce confusion because of the lack of such a common standard of comparison. On that single dimension, cost-benefit analysis can give an answer as to whether a project is desirable or not, while other methods tend to produce more ambiguous results.

Principles of Cost-Benefit Analysis

In the world of cost-benefit analysis, more is always better. Although it does have serious intellectual foundations, the method is in many ways no more than a systematic framework within which to collect data concerning the merits and demerits of a public program. And it is not a new idea: the Army Corps of Engineers used the technique as early as 1900 to evaluate the merits of proposed improvements to rivers and harbors. The basic procedure is to enumerate the positive features of a program and attach a monetary value to them, and at the same time to enumerate the negative features and attach a monetary value to those features. The net balance of costs and benefits will then determine if a program is economically feasible, although many other questions about its desirability may remain.

One principal concept underlying cost-benefit analysis comes from the tradition in welfare economics that has sought to develop an acceptable social welfare function, or a socially desirable means for making collective policy decisions. That is, how can societies take the numerous and often conflicting views of their citizens and generate the policy choices that are the most acceptable to the society? One of the first welfare criteria of this sort was the Pareto principle, which argued that a policy move was optimal if no move away from it could be made to benefit someone without hurting someone else. Stated another way, a Pareto optimal policy move would be one that benefits at least one person without hurting anyone. Clearly, in the real world of political decision making, policies of this kind are rare indeed, and politics is frequently about who gets what at the expense of whom. Therefore, using the Pareto principle would be extremely conservative, supporting very few public interventions.

A substitute welfare criterion was advanced by Nicholas Kaldor and John Hicks, who argued that a policy change is socially justified if the winners gain a sufficient amount to compensate the losers and still have something left for themselves. This does not imply that those winners necessarily will compensate the losers or that government can even identify the losers, but it presumes that the society as a whole is better off because of the overall increase in benefits. This welfare criterion obviously is a justification of the reliance of cost-benefit analysis on the production of the greatest possible net benefit; it can be hoped that at least part of the benefits created will somehow find their way to the individuals
who may have been harmed by the policy choice, but at least those benefits have been created. Intellectually, this approach has another problem: it requires aggregating utilities across a range of individuals, and that requires doing the nearly impossible—making interpersonal comparisons of utility.6

A second fundamental idea underlying cost-benefit analysis is that of the consumer’s surplus.7 Stated simply, this is the amount of money a consumer would be willing to pay for a given product, minus the amount he or she must actually pay. Consumers tend to value the first unit of a product or service they receive more highly than the second, and the second more highly than the third: the first quart of milk where there has been none is more valuable than the second. But the units of a product are not priced marginally; they are sold at an average price, which means that the utility of increased production will give consumers a surplus value from the production. Thus, any investment that reduces the cost of the product or service produces a benefit in savings that increases the consumer surplus. The investment by government in a new superhighway that reduces the cost to consumers of driving the same number of miles—in time, in gasoline, and in potential loss of life and property—creates a consumer surplus. And as the time, gasoline, and lives saved by the new highway may be used for other increased production, the actual savings represent a minimum definition of the improvement to society resulting from the construction of the new highway.

Also important in understanding cost-benefit analysis is the concept of opportunity costs: any resource used in one project cannot be used in another. For example, the concrete, steel, and labor used to build the superhighway cannot be used to build a new dam. Consequently, all projects must be evaluated against other possible projects to determine the most appropriate way to use resources—especially financial resources. Projects are also compared, implicitly if not explicitly, with taking no action and allowing the money to remain in the hands of individual citizens. Again, the basic idea of getting the most “bang for the buck” is important in understanding cost-benefit analysis.

When identifying and assessing costs and benefits, the analyst must also be concerned with the range of effects of the proposed program and the point at which he or she disregards effects as being too remote for consideration.8 For example, building a municipal waste incinerator in Detroit, Michigan, will have pronounced effects in Windsor, Ontario, Canada, that must be considered—even though that city is outside the United States. The prevailing air currents may mean that some ash and acid from the incinerator also reach Norway and Sweden, but those effects may be so minimal and so remote that they can safely be disregarded. Engaging in this form of analysis requires making judgments about what effects are sufficiently proximate and important to be included in the calculations.
Finally, in evaluating costs and benefits, we must be concerned about time. The costs and benefits of most projects do not occur at a single time, but accrue over a number of years. If our superhighway is built, it will be serviceable for fifty years and will be financed over twenty years through government bonds. Policymakers must be certain that the long-term costs and benefits as well as the short-term consequences are positive. This, of course, requires some estimation of the nature of the future. We may estimate that our new superhighway will be useful for fifty years, but oil shortages may so reduce driving during that period that the real benefits will be much less than anticipated. Or, conversely, the value of gasoline may increase so much that the savings produced are more valuable than assumed at present. These kinds of assumptions about the future must be built into the model of valuation if it is to aid a decision maker.

In part because of the uncertainty over future costs and benefits, and in part because of the general principle that people prefer a dollar today to a dollar next year, the costs and benefits of projects must be converted to present values before useful cost and benefit calculations can be made. That is, the benefits that accrue to the society in the future have their value discounted and are consequently worth less than benefits produced in the first year of the project. Likewise, costs that occur in future years are valued less than costs that occur in the first few years. Thus, cost-benefit analysis would appear to favor projects that offer quick payoffs rather than greater long-term benefits, but perhaps higher maintenance and operation costs as well. While there may be a good logical justification for these biases in the method, they do certainly influence the kinds of programs that will be selected, and that fact will have definite social implications, not least of all for future generations. Other forms of analytic aids for government decision makers, such as “decision trees”, include probabilities of outcomes as a means of coping with the uncertainties of the future, but cost-benefit analysis tends to rely instead on discounting future costs and benefits.

Doing Cost-Benefit Analysis

To better understand the application of cost-benefit analysis, we now work through the steps required to justify the construction of a new dam on the Nowhere River. This project is being proposed by the Army Corps of Engineers, and we have to determine whether or not the project should be undertaken. We must first decide if the project is feasible and acceptable on its own, and then if it is preferable to other projects that could be funded with the same resources. Again, this decision is being made first on economic grounds, although we may have to bring other forms of analysis (politics) and other criteria (the environment may be trumps) into the decision process at a later time.
While the TVA's multiple hydroelectric projects provide cheap power, stimulate industrialization, and create new recreational opportunities in remote areas, the costs of maintenance, upkeep, and restoration of these immense structures can be considerable.

**Determining Costs and Benefits**

One of the most important factors to consider when performing a cost-benefit analysis, especially of a public project, is that all costs and benefits should be enumerated. Thus, unlike projects that might be undertaken in the private sector, public projects require an explicit statement of the social, or external, costs and benefits. In the public sector, projects whose strictly economic potential outweighs their costs may be rejected because of the possibility of pollution or the loss of external benefits such as natural beauty. In fact, one of the principal logical justifications for the existence of the public sector is that it should take into account these external factors and attempt to correct them in ways not possible in the private sector.\(^9\) Even with that social justification, however, the values of the costs and benefits are usually computed in economic terms just as if they were to accrue in the private market. This reliance on market logic for non-market decisions is one of the fundamental ironies in cost-benefit analysis.\(^{10}\)

Thus, for our dam project, we can think of two lists of attributes (see table 16.1). On one side are the costs of the project, the main one being the economic
Table 16.1 Costs and Benefits of Dam Project

<table>
<thead>
<tr>
<th>Costs</th>
<th>Benefits</th>
</tr>
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<tbody>
<tr>
<td>Construction costs</td>
<td>Hydroelectric power</td>
</tr>
<tr>
<td>Flooded land</td>
<td>Flood control</td>
</tr>
<tr>
<td>Relocation of families</td>
<td>Irrigation</td>
</tr>
<tr>
<td>Loss of recreation</td>
<td>New recreational opportunities</td>
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</tbody>
</table>

cost of constructing the dam, which should reflect the market valuation of the opportunity costs of using the same resources for other purposes. Also, the dam will impose an economic cost by flooding the houses and farmland of present inhabitants of the area, and there are social, or human, costs involved as well, for these farms have been in the same families for generations, and the farmers have resisted the project from the beginning. Finally, there are additional social costs in that the proposed dam will impound a river that currently has some recreational value for canoeists and is essentially an unspoiled natural area.

On the other side of the ledger are the benefits of the program. First, the dam will provide hydroelectric power for the region. In so doing it will provide a source of electric power that does not consume scarce fossil fuels and does not create the air pollution that would result from producing the same amount of electricity with fossil fuels. Also, the dam would help control the raging Nowhere River, which every spring overflows its banks and floods a number of towns, cities, and farms downstream. In addition, the impounded water behind the dam will provide irrigation water for the remaining farmers, enabling them to grow crops more reliably than if they had to rely on rainfall alone. Finally, although canoeists will lose some recreational benefits as a result of the building of the dam, citizens who enjoy power boating and water skiing will benefit from the large lake formed behind the dam. Thus, although this proposed dam does impose a number of costs on the society, it also provides a number of benefits in return. To proceed with this analysis, we must now begin to attach some quantitative values to these costs and benefits in order to be able to make a decision as to the feasibility and desirability of the project.

Assigning Value

Assigning a real monetary value to all the costs and benefits of this mythical project would be difficult. The market directly provides a value for some aspects: we know, or can estimate accurately, the costs of building the dam and the market value of the hydroelectric power it will produce. Although such costs are generally measurable through the market, the market may not fully reflect the costs and
benefits. For example, if our dam is to be built in a remote area with little more
than subsistence agriculture, bringing in a large number of highly skilled and
highly paid workers may distort prices and increase the costs of building the dam.
Similarly, not only is the hydroelectric power salable, but it may produce substan-
tial secondary benefits (or perhaps costs) by stimulating industrialization in this re-
more rural area. The experience of the Tennessee Valley Authority and its impact
on the Tennessee Valley as a result of the development of cheap electric power il-
ustrates this point rather nicely.11 We cannot fully predict these secondary benefits,
nor can we rely on them to make the project feasible, but they do frequently occur.

Some other costs and benefits of the project, although not directly measurable
through the market, can be estimated in other ways. For example, we have to
estimate the dam’s recreational value to the people who will use the lake for wats-
terskiing and its cost to those who will no longer be able to use the river for ca-
noeing. We can do this by estimating the people’s willingness to pay for their re-
creation12—just how much time and money are they willing to invest to enjoy
these recreational activities? Evidence for this calculation can be gained from sur-
veys of recreation participants, or from their actual behavior in renting equipment
and travel to recreation sites. These calculations will offer some measure of the eco-
nomic value of the lake, and of the free-flowing stream, to the population.

The creation of the dam and the lake behind it help illustrate another point
about valuing costs and benefits. The lake will produce lakefront property, which
tends to have higher market value than does other nearby property, so some-
thing of the aesthetic value of the impoundment can be calculated. This
method of valuation is analogous to estimating the value of clean air by com-
paring prices of similar housing in polluted and less polluted areas of a city.13

This method of valuation returns to the concept of the consumer’s surplus.
The first unit of a particular commodity is valued more highly than any subse-
quent units, so that as production is increased, each unit is marginally less valu-
able to the consumer. In our dam example, if there already have been a number
of impoundments in the area—as there have been in the Tennessee Valley—a
new lake will have less value to recreation consumers, and they will be less will-
ing to pay than if this were the first lake in an area with a large number of free-
flowing streams. Likewise, one more hydroelectric power station in an area that
already has cheap electrical power is less valuable than it would be in an eco-
nomically backward area, and consequently citizens will be less willing to pay for
that new power plant.

Finally, on some aspects of the project the market provides little or no guid-
ance about valuation. For the farmers who are displaced by the project, we can
calculate the economic value of their land, their houses, and their moving costs,
but we cannot readily assign an economic value to those houses that are the an-
cestral homes of families and are therefore more valuable psychologically than
ordinary houses. Similarly, there is some value in not disturbing a natural setting, simply because it is natural, and this is a difficult thing to which to assign an economic value. As a result, absolute prohibitions are sometimes built into legislation to prevent certain actions, so planners cannot depend entirely on net-benefit ratios. The Environmental Protection Agency's guideline for preserving the habitats of endangered species, which resulted in the now notorious case of the snail darter in the Little Tennessee River and the more recent case of the delta smelt in California, is an example of the application of regulations to prevent some actions regardless of the relative economic costs and benefits.

The willingness-to-pay approach to valuation questions the people directly involved with the project about their own valuation of costs and benefits. For some of those costs and benefits, the population at large may be equally important as judges of the value. Federal regulators are now under congressional mandates to find ways to assess the value that the public assigns to the costs of environmental problems such as oil spills. These "contingent value" measurements by passive users are now being undertaken by survey methods. The first of these was conducted by the National Oceanic and Atmospheric Administration and gained broad support from environmental groups. This method of valuation has, however, met general opposition by business concerns and has been contested in the court system.

It is fortunate that the dam we are building does not require any direct decisions about loss of life or injury to human beings. With projects that do—for example, building the superhighway as a means of saving lives—we come to perhaps the most difficult problem of valuation: estimating the value of a human life. Although it is convenient to say that life is priceless, in practice decisions are made that deprive some people of their lives even when that loss of life is preventable, and when this is the case, some subjective, if not objective, evaluation is being made of the worth of lives. One standard method of making such a judgment involves discounted future earnings: the life of the individual is worth whatever the individual could have earned in the course of his or her working life, discounted to present value. Therefore, by this method, a highly paid corporate executive's life is valued more highly than a housewife's or a college professor's. This mechanism for evaluating lives clearly conforms to the basic market valuation, but it can clearly be contested on humane grounds—its use in distributing compensation payments to the families of those who died in the terrorist attacks of September 11th has generated a great deal of political controversy.

Another method of assessing the value of lives as a basis for cost-benefit analysis utilizes the size of awards to plaintiffs in legal cases involving negligence or malpractice that resulted in loss of life. In other words, what do panels of citizens or judges consider a human life to be worth? This method constitutes yet another version of the market criterion, albeit one in which considerations of
Table 16.2  Hypothetical Costs and Benefits of Dam Project for Twenty Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Costs</th>
<th>Benefits</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>3</td>
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<td>4</td>
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<td>11</td>
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<td>15</td>
<td>1</td>
<td>5</td>
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<td>16</td>
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<td>17</td>
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<td>19</td>
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<td>5</td>
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<td>20</td>
<td>1</td>
<td>5</td>
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</table>

human suffering and “loss of companionship” have a greater—some would say too great because of the emotionalism involved—impact on the economic valuation than does earning power. This valuation also is affected, particularly in the minds of insurance companies responsible for most of the payments, by emotional appeals by attorneys.

Another means of assessing the value of a human life is somewhat similar to the “willingness to pay” criterion. In theory, individuals would be willing to pay almost anything to preserve their own lives and the lives of their loved ones. However, individuals engage in risky behavior and risky occupations all the time, and when they do so, they make a subjective statement about the value of their lives. Because we know how much more likely it is for a coal miner to be killed at work—either in the mines or as a result of black lung disease—than it is for a construction worker, we can estimate from any differences in wages how much these individuals would appear to value their lives. This method does, of course, imply a certain level of knowledge that individuals may not have, and it assumes that the collective bargaining process, through which wages of coal miners and construction workers are determined, accurately reflects both individual preferences and the market values of lives. This method does, however, offer another feasible means of estimating the value of life, one that uses assessments by individual citizens rather than by the market or the courts.

**Discounting**

We now return to the problem of time. The costs and benefits of a project do not all magically appear as soon as the project is completed, but typically are stretched over a number of years. Table 16.2 shows the stream of benefits coming from the dam on the Nowhere River over a twenty-year period. This is the projected feasible lifetime of the project because the Nowhere River carries a great deal of silt, which is expected to fill the lake behind the dam by the end of that period. How do we assess these benefits and come up with a single number to compare with costs in order to determine the economic feasibility of the project?

To calculate such a figure, we must compute the present value of the future benefits. We have already decided on the time span of the project; the only task
that remains is to determine the discount rate that should be applied to a public investment. And, as with the valuation of costs and benefits, disagreements may arise about what that rate should be. One method is to use the opportunity costs of the use of these funds. Presumably any money used in a project in the public sector will be extracted from the private sector by some means such as taxation or borrowing, and consequently the rate of return these resources could earn if they were invested in private-sector projects is the appropriate rate of discount for public-sector projects. This is not always a practical solution, however, as rates of return differ for different kinds of investments, and investors apparently choose to put some money into each kind of investment. Is building a dam more like speculative mining investments, building a steel mill, or investing in an insured savings account? Which of the many possible rates of return should be selected?

Several other issues arise with respect to the selection of a discount rate. First, in discussing projects for which most benefits are to accrue in the future, there is an element of uncertainty. In our example we have assumed that the probable life span of the dam will be twenty years, but in reality the lake may fill up with silt in fifteen years. Consequently, it may be more prudent to select a discount rate higher than that found in the market because we cannot be sure of the real occurrence or real value of the benefits. And because these benefits are expected to be further away in time, they are less certain; therefore, even higher rates of discount should be applied. Also, considering the effects of inflation and the uncertainties about the development of new energy sources, we may need to be more conservative about discount rates.

Second, some analysts argue that there should be a "social rate of discount" lower than that established by the market. Such an arbitrarily set discount rate would be justified on the basis of the need for greater public investment in order to provide a capital infrastructure for future generations. Further, as the size of the public sector is to some degree determined by the rate of discount, that rate should be set not by the market but by more conscious political choices concerning the appropriate level of public activity. The economic counterargument is that, in the long term, the society will be better off if resources are allocated on the basis of their opportunity costs. If a public project is deemed infeasible because of the selection of a market-determined discount rate, then the resources that would have been used in that project would, it is argued, produce greater social benefit in a project that is feasible under that rate of discount; this would be true regardless of whether the project is in the public or the private sector. If no such project is available, then the money would be better saved until such a project does materialize.

Finally, a question arises about intergenerational equity. What do we owe to posterity, or, to put it the other way around, what has posterity ever done for us?
Table 16.3  Costs and Benefits of Alternate Projects (in millions of dollars)

<table>
<thead>
<tr>
<th>Projects</th>
<th>Costs</th>
<th>Benefits</th>
<th>Net benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>70</td>
<td>130</td>
<td>60</td>
</tr>
<tr>
<td>B</td>
<td>75</td>
<td>120</td>
<td>45</td>
</tr>
<tr>
<td>C</td>
<td>200</td>
<td>270</td>
<td>70</td>
</tr>
<tr>
<td>D</td>
<td>150</td>
<td>250</td>
<td>100</td>
</tr>
</tbody>
</table>

If the discount rate is set lower than that determined by the market, we will tend to undertake more projects that have an extended time value and that will benefit future generations. But we will also deprive the present generation of opportunities for consumption by using those resources as investment capital. This is as much a philosophical as a practical issue, but it is important for our understanding of alternative consequences arising from alternative choices of a rate of discount for public projects.

Using several discount rates, we now work through the example of levels of benefit from the dam. Let us assume that the prime interest rate in the United States is approximately 8 percent. If we use this market-determined interest rate, the $100 in benefits produced after one year would be worth

$$V = \frac{100}{1.08} = 92.59.$$  

And $100 in benefits produced after two years would be worth

$$V = \frac{100}{(1.08)^2} = 85.73.$$  

And $100 in benefits produced in the twentieth year of the project would be worth only $21.45 in present value. Thus, if we use this market rate of discount in evaluating a public project, the net benefit of that project at present value is positive. This project has a rather high cost during its early years, with the benefits occurring gradually over the twenty years. At a higher discount rate, however, such a project is not feasible. If we use a discount rate of 18 percent, which would have seemed very reasonable in the late 1970s (but absurd in the 1990s), the net benefit of the dam at present value would be negative and the project would be economically infeasible.

Discounting is a means of reducing all costs and benefits of a project to present value, based on the assumption that benefits created in the future are worth less than those created immediately. Philosophically or ideologically one might desire a low discount rate in order to encourage public investment but object to the entire process of discounting. Should we not simply look to see if the stream of benefits created is greater than the total costs, no matter how and when they occur? This would, of course, be equivalent to a discount rate of zero. This point may be valid philosophically, but until the argument is accepted by economists,
financiers, and government decision makers, public investment decisions will be made on the basis of present value and on the basis of interest rates that approximate the real value of the rate of return in the private sector.

**Choosing among Projects**

We have determined that our dam on the Nowhere River is feasible, given that a benevolent deity has provided us a discount rate of 8 percent for this project. But it is not yet time to break ground for the dam. We must first compare our project with the alternative projects for funding. Thus, the opportunity cost question arises not only with respect to the single project being considered and the option of allowing the money to remain in private hands but also with regard to choices made among other possible projects in the public sector.

We have argued that the fundamental rule is to select the project that will produce the greatest total benefit to society. If we apply the Kaldor-Hicks criterion, we see that this project is justified simply because it will create more benefits to spread around in the society and presumably will compensate those who have lost something because the project was built. Thus, in the simplest case, if we were to choose to undertake only a single project this year—perhaps because of limited manpower for supervision—we would choose Project D from table 16.3 simply because it creates the highest level of net benefit. By investing less money in Projects A and B we could have produced slightly more net benefit for society, but we are administratively constrained from making that decision and must choose only the one most productive investment.

More commonly, however, a particular resource—usually money—is limited, and with that limitation in mind, we have to choose one or more projects that will result in maximum benefits. Let us say that the ten projects listed in
Table 16.4 are all economically feasible and that we have been given a budget of $50 million for capital projects. Which projects should we select for funding? In such a situation, we should rank the projects according to the ratio of net benefits to initial costs (the costs that will be reflected in our capital budget), and then we should begin with the best projects, in terms of the ratio of benefits to initial costs, until the budget is exhausted. In this way, we will get the greatest benefit for the expenditure of our limited funds. And projects that we might have selected if we were choosing only a single project would not be selected under these conditions of resource constraint.

This problem of selecting among projects demonstrates the first of several problems that arise from the application of the basic rule of cost-benefit analysis. Given the budgetary process and the allocation of funds among agencies, we may produce a case of “multi-organizational sub-optimization.” This is a fancy way of saying that if our agency has been given $50 million, we will spend it, even if other agencies have projects that will produce greater benefits for society but do not have adequate funds in their budgets. Thus, if I had the money, I would continue to fund the projects listed in Table 16.4 even though several of them have relatively low net-benefit ratios and even though there might be better projects that other government bureaus wanted to fund. Of course, I will have been asked what benefits my proposed projects would produce when the capital budget was being considered, but because of political considerations arising in the process my budget is excessive in light of the benefits that could be produced from alternative uses of the money. This is not, of course, a flaw in the method; it is a flaw in the application of the method in complex and competitive government settings.

A not unrelated problem is that cost-benefit analysis places relatively little importance on efficiency or cost effectiveness. It looks primarily at total benefits produced rather than at the ratio of benefits to costs. It could be argued that this method tends to favor the axe over the scalpel as a cutting tool; in other words, it tends to favor large projects over small projects. This may be an inefficient use of resources, and it may lock government into costly projects, whereas smaller projects might provide greater flexibility and greater future opportunities for innovation. Capital projects are inherently lumpy, so that only projects of a certain size are feasible, but the concentration on total net benefits in cost-benefit analysis may exaggerate the problems of size and inflexibility.

We have now worked our way from the initial step of deciding what costs and benefits our project provides to deciding if it is the best project to undertake, given limited budgetary resources and the competing uses of the money. At each stage of the process we have had to adopt a number of assumptions and approximations to reach a decision. Thus, although cost-benefit analysis does provide a “hard” answer as to whether or not we should undertake a project, that
answer should not remain unquestioned. We now discuss some criticisms of cost-benefit analysis and some possible ways of building greater political and economic sophistication into the application of the methodology.

Extensions

We have so far been discussing a very basic approach to the method of cost-benefit analysis. There are, however, a number of extensions and modifications that are important for thinking about the utility of the method. First, other techniques such as cost-effectiveness analysis have many things in common with cost-benefit analysis but offer their own particular perspectives. For example, cost-effectiveness analysis does not require the assessment of the value of various outcomes to the extent required in cost-benefit analysis, but rather assumes that an outcome is desirable. Unlike cost-benefit analysis, this technique cannot tell the analyst whether an outcome is beneficial, only what it will cost to achieve a specified quantity of the outcome. Therefore, cost-effectiveness analysis tends to be used frequently in health policy and medicine, where curing a disease is a prima facie good; the question is how much will it cost. Even then, however, some physicians do not like the concept of attaching a price to a cure and thinking about efficiency in medical care.

Criticism and Modification

Such things as the difficulty of assigning monetary values to nonmonetary outcomes, the choice of time ranges and discount rates, and the reliance on total net benefit as the criterion all introduce uncertainties about the usefulness of the outcome. We now discuss more basic problems that arise concerning the method itself and its relationship to the political process. Perhaps the most important is that some naive politicians and analysts might let the method make decisions for them, instead of using the information derived from the analysis as one among many elements in their decision-making process. If the method is thus used naively and uncritically, its application can result in decisions that many people would deem socially undesirable. For example, all costs and benefits are counted as equal in the model, and even if they could be calculated accurately, some individuals would argue that the cost of death might be more important than other costs. Thus, we might wish to first reduce deaths to the lowest possible level and then perhaps apply a cost-benefit analysis to other aspects of the project. We might use this “lexicographic preference” as a means of initially sorting projects, when a single dominant value such as life or the preservation of an endangered species is involved. That is, we would take only projects that “pass” the one crucial test and then subject those to cost-benefit analysis.
Perhaps the most socially questionable aspect of cost-benefit analysis is that it gives little attention to the distributive questions involved in all policies. All benefits and costs are counted equally in the method, regardless of who receives or bears them. A project that increased the wealth of a wealthy man by several million dollars and was financed by regressive taxation of $100,000 would be preferred in cost-benefit calculations to a project that produced a benefit of $900,000 for unemployed workers and was financed by progressive taxation of $200,000. This is an extreme example, but it does point to the distributorial blindness of the method. Of course, advocates of the method justify it by saying that the society as a whole will be better off with the greatest increase in benefits, and presumably winners can later compensate losers. In reality, however, winners rarely if ever do so, and usually losers cannot be directly identified anyway. Redistributorial goals may be included directly in the analysis, by attaching some weight greater than one to positive changes in the salaries of low-income or unemployed persons, or they may be imposed on the analysis after the fact. However, because government exists in part to attempt to redress some of the inequities produced in the marketplace, some attention must be given to redistributorial goals when evaluating public projects.

Furthermore, the utilitarian and "ecocratic" foundations of cost-benefit analysis may not be entirely suitable for a functioning political democracy. Money alone is the measure of all things, and decisions made according to this method can be expected to be based on economic rather than the political values. In Chapter 17 I discuss some possible ethical alternatives that may be more suitable in a democracy. The difficulty is that these other criteria lack the apparent precision of cost-benefit analysis and also its ability to provide a clear-cut answer to questions about the desirability of a policy intervention.

Finally, cost-benefit analysis has been referred to as "nonsense on stilts." This rather rude description implies that there are so many assumptions involved in the calculations, and so many imponderables about the future effects of projects, that cost-benefit analysis is the functional equivalent of witchcraft in the public sector. Although this criticism has been phrased in exaggerated language, to some degree it is well taken. It is difficult if not impossible to know the value of eliminating an externality, just as it is difficult to know just how much life, health, and snail darters are worth economically. Cost-benefit analysis can be used to avoid difficult political decisions and to yield responsibility to experts who can supply the "correct" answer. Of course, this fundamental abdication of political responsibility is indeed an "insidious poison in the body politic." Only when the results of analysis are integrated with other forms of analysis, including ethical analysis, and then combined with sound political judgment, can the "correct decision" ever be made.