

Cost-Benefit Analysis Defended

In past issues, QQ has printed articles that raised philosophical objections to the use of cost-benefit analysis in public policy decision-making. In the following discussion, Herman B. Leonard and Richard J. Zeckhauser, of the John F. Kennedy School of Government at Harvard University, present a defense of cost-benefit analysis against many of these objections. This article is drawn from a longer paper written by Leonard and Zeckhauser for a Center research project on risk and consent, funded by the National Science Foundation.

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Cost-benefit analysis, particularly as applied to public decisions involving risks to life and health, has not been notably popular. A number of setbacks—Three Mile Island is perhaps the most memorable—have called into question the reliability of analytic approaches to risk issues. We believe that the current low reputation of cost-benefit analysis is unjustified, and that a close examination of the objections most frequently raised against the method will show that it deserves wider public support.

Society does not and indeed could not require the explicit consent of every affected individual in order to implement public decisions that impose costs or risks. The transactions costs of assembling unanimous consent would be prohibitive, leading to paralysis in the status quo. Moreover, any system that required unanimous consent would create incentives for individuals to misrepresent their beliefs so as to secure compensation or to prevent the imposition of relatively small costs on them even if the benefits to others might be great.

If actual individual consent is an impractically strong standard to require of centralized decisions, how should such decisions be made? Our test for a proposed public decision is whether the net benefits of the action are positive. The same criterion is frequently phrased: Will those favored by the decision gain enough that they would have a net benefit even if they fully compensated those hurt by the decision? Applying this criterion to all possible actions, we discover that the chosen alternative should be the one for which benefits most exceed costs. We believe that the benefit-cost criterion is a useful way of defining "hypothetical consent" for centralized decisions affecting individuals with widely divergent interests: hypothetically, if compensation could be paid, all would agree to the decision offering the highest net benefits. We turn now to objections commonly raised against this approach.

Compensation and Hypothetical Consent

An immediate problem with the pure cost-benefit criterion is that it does not require the actual payment of compensation to those on whom a given decision imposes net costs. Our standard for public decision-making does not require that losers be compensated, but only that they *could* be if a perfect system of transfers existed. But unless those harmed by a decision are *actually* compensated, they will get little solace from the fact that someone is reaping a surplus in which they could have shared.

To this we make two replies. First, it is typically infeasible to design a compensation system that ensures that all individuals will be net winners. The transactions costs involved in such a system would often be so high as to make the project as a whole a net loss. But it may not even be desirable to construct full compensation systems, since losers will generally have an incentive under such systems to overstate their anticipated losses in order to secure greater compensation.

Second, the problem of compensation is probably smaller in practice than in principle. Society tends to compensate large losses where possible or to avoid imposing large losses when adequate compensation is not practical. Moreover, compensation is sometimes overpaid; having made allowances *ex ante* for imposing risks, society still chooses sometimes to pay additional compensation *ex post* to those who actually suffer losses.

Libertarians raise one additional argument about the ethical basis of a system that does not require full compensation to losers. They argue that a public decision process that imposes uncompensated losses constitutes an illegal taking of property by the state and should not be tolerated. This objection, however strongly grounded ethically, would lead to an untenable position for society by unduly constraining public decisions to rest with the status quo.

Attention to Distribution

Two distinct types of distributional issue are relevant in cost-benefit analysis. First, we can be concerned about the losers in a particular decision, whoever they may be. Second, we can be concerned with the transfers between income classes (or other defined groups) engendered by a given project. If costs are imposed differentially on groups that are generally disadvantaged, should the decision criterion include special consideration of their interests? This question is closely intertwined with the issue of compensation, because

it is often alleged that the uncompensated costs of projects evaluated by cost-benefit criteria frequently fall on those who are disadvantaged to start with.

These objections have little to do with cost-benefit analysis as a method. We see no reason why any widely agreed upon notion of equity, or weighting of different individuals' interests, cannot in principle be built into the cost-benefit decision framework. It is merely a matter of defining carefully what is meant by a benefit or a cost. If, in society's view, benefits (or costs) to some individuals are more valuable (costly) than those to others, this can be reflected in the construction of the decision criterion.

But although distribution concerns could be systematically included in cost-benefit analyses, it is not always—or even generally—a good idea to do so. Taxes and direct expenditures represent a far more efficient means of effecting redistribution than virtually any other public program; we would strongly prefer to rely on one consistent comprehensive tax and expenditure package for redistribution than on attempts to redistribute within every project.

First, if distributional issues are considered everywhere, they will probably not be adequately, carefully, and correctly treated anywhere. Many critics of cost-benefit analysis believe that project-based distribu-

tional analysis would create a net addition to society's total redistributive effort; we suggest that is likely, instead, to be only an inefficient substitution.

Second, treating distributional concerns within each project can only lead to transfers within the group affected by a project, often only a small subset of the community. For example, unisex rating of auto insurance redistributes only among drivers. Cross-subsidization of medical costs affects only those who need medical services. Why should not the larger society share the burden of redistribution?

Third, the view that distributional considerations should be treated project-by-project reflects a presumption that on average they do not balance out—that is, that some groups systematically lose more often than others. If it were found that some groups were severely and systematically disadvantaged by the application of cost-benefit analyses that ignore distributional concerns, we would favor redressing the balance. We do not believe this is generally the case.

Sensitive Social Values

Cost-benefit analysis, it is frequently alleged, does a disservice to society because it cannot treat important social values with appropriate sensitivity. We believe that this view does a disservice to society by



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unduly constraining the use of a reasonable and helpful method for organizing the debate about public decisions. We are not claiming that every important social value can be represented effectively within the confines of cost-benefit analysis. Some values will never fit in a cost-benefit framework and will have to be treated as "additional considerations" in coming to a final decision. Some, such as the inviolability of human life, may simply be binding constraints that cannot be traded off to obtain other gains. Nor can we carry out a cost-benefit analysis to decide which values should be included and which treated separately—this decision will always have to be made in some other manner.

These considerations do not invalidate cost-benefit analysis, but merely illustrate that more is at stake than just dollar measures of costs and benefits. We would, however, make two observations. First, we must be very careful that only genuinely important and relevant social values be permitted to outweigh the findings of an analysis. Second, social values that frequently stand in the way of important efficiency gains have a way of breaking down and being replaced over time, so that in the long run society manages to accommodate itself to some form of cost-benefit criterion. If nuclear power were 1000 times more dangerous for its employees but 10 times less expensive than it is, we might feel that ethical considerations were respected and the national interest well served if we had rotating cadres of nuclear power employees serving short terms in high-risk positions, much as members of the armed services do. In like fashion, we have fire-fighters risk their lives; universal sprinkler systems would be less dangerous, but more costly. Such policies reflect an accommodation to the costs as a recognition of the benefits.

Measurability

Another objection frequently raised against cost-benefit analysis is that some costs and benefits tend to be ignored because they are much more difficult to measure than others. The long-term environmental impacts of large projects are frequently cited as an example. Cost-benefit analysis is charged with being systematically biased toward consideration of the quantifiable aspects of decisions.

This is unquestionably true: cost-benefit analysis is *designed* as a method of quantification, so it surely is better able to deal with more quantifiable aspects of the issues it confronts. But this limitation is in itself ethically neutral unless it can be shown that the quantifiable considerations systematically push decisions in a particular direction. Its detractors must show that the errors of cost-benefit analysis are systematically unjust or inefficient—for example, that it frequently helps the rich at the expense of the poor, or despoils the environment to the benefit of industry, or vice versa. We have not seen any carefully researched evidence to support such assertions.

We take some comfort in the fact that cost-benefit

analysis is sometimes accused of being biased toward development projects and sometimes of being biased against them. Cost-benefit analyses have foiled conservation efforts in national forests—perhaps they systematically weight the future too little. But they have also squelched clearly silly projects designed to bring "economic development" to Alaska—and the developers argued that the analysis gave insufficient weight to the "unquantifiable" value of future industrialization.

In our experience, cost-benefit analysis is often a tool of the "outs"—those not currently in control of the political process. Those who have the political power to back the projects they support often have little need of analyses. By contrast, analysis can be an effective tool for those who are otherwise not strongly empowered politically.

Analyzing Risks

Even those who accept the ethical propriety of cost-benefit analysis of decisions involving transfers of money or other tangible economic costs and benefits sometimes feel that the principles do not extend to analyzing decisions involving the imposition of risks. We believe that such applications constitute a *particularly* important area in which cost-benefit analysis can be of value. The very difficulties of reaching appropriate decisions where risks are involved make it all the more vital to employ the soundest methods available, both ethically and practically.

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Historically, cost-benefit analysis has been applied widely to the imposition and regulation of risks, in particular to risks of health loss or bodily harm. The cost-benefit approach is particularly valuable here, for several reasons. Few health risks can be exchanged on a voluntary basis. Their magnitude is difficult to measure. Even if they could be accurately measured, individuals have difficulty interpreting probabilities or gauging how they would feel should the harm eventuate. Compounding these problems of valuation are difficulties in contract, since risks are rarely conveyed singly between one individual and another.

The problem of risks conveyed in the absence of contractual approval has been addressed for centuries through the law of torts, which is designed to provide compensation after a harm has been received. If only a low-probability risk is involved, it is often efficient to wait to see whether a harm occurs, for in the over-

whelming majority of circumstances transactions costs will be avoided. This approach also limits debate over the magnitude of a potential harm that has not yet eventuated. The creator of the risk has the incentive to gauge accurately, for he is the one who must pay if harm does occur.

While in principle it provides efficient results, the torts approach encounters at least four difficulties when applied to many of the risks that are encountered in a modern technological society. The option of declaring bankruptcy allows the responsible party to avoid paying and so to impose risks that it should not impose. Causality is often difficult to assign for misfortunes that may have alternative or multiple (and synergistically related) causes. Did the individual contract lung cancer from air pollution or from his own smoking, or both? Furthermore, the traditional torts requirement that individuals be made whole cannot be met in many instances (death, loss of a limb). Finally, paying compensation after the fact may also produce inappropriate incentives, and hence be inefficient. Workers who can be more or less careful around dangerous machinery, for example, are likely to be more careful if they will not be compensated for losing an appendage.

Our normal market and legal system tends to break down when substantial health risks are imposed on a relatively large population. These are, therefore, precisely the situations in which the cost-benefit approach is and should be called into play. Cost-benefit

analysis is typically used in just those situations where our normal risk decision processes run into difficulty. We should therefore not expect it to lead to outcomes that are as satisfactory as those that evolve when ordinary market and private contractual trade are employed. But we should be able to expect better outcomes than we would achieve by muddling through unsystematically.

We have defended cost-benefit analysis as the most practical of ethically defensible methods and the most ethical of practically usable methods for conducting public decision-making. It cannot substitute for—nor can it adequately encompass, analyze, or consider—the sensitive application of social values. Thus it cannot be made the final arbiter of public decisions. But it does add a useful structure to public debate, and it does enable us to quantify some of the quantifiable aspects of public decisions. Our defense parallels Winston Churchill's argument for democracy: it is not perfect, but it is better than the alternatives.

This article is substantially condensed and adapted from "Cost-Benefit Analysis Applied to Risks: Its Philosophy and Legitimacy," by Herman B. Leonard and Richard J. Zeckhauser, Center for Philosophy and Public Policy Working Paper RC-6 (College Park, Md.: Center for Philosophy and Public Policy, 1983). The original includes a wide variety of illustrative examples, which could not be reprinted here. To order this paper and other newly released working papers from the Center's project on risk and consent, see page 15.

America's Public Lands: To Use or Not to Use?

The federal government owns about three-quarters of a billion acres—approximately one-third of the land area of the United States. Although something approaching one-third of these public lands (or one-ninth of all U.S. lands) can be considered preserved lands, only a fraction of these lands are fully protected. The remaining 150 million acres of public lands now set aside from use are either recommended for permanent designation, under study, or under planning. The continuing battles over the final decisions regarding the use of these lands constitute some of the major land-use decisions our country faces.

It would be a tragedy if these crucial decisions were made on the basis of short-term economic gains for private corporations or by self-interested defenses of wilderness generated by local environmental groups

bent on forcing the problems accompanying growth to occur elsewhere. Such a tragedy can be avoided only if decisions are made on the basis of rational land use criteria. What concepts, values, and principles underlie such criteria?

Conservation and Preservation

Policies regarding a parcel of land range from radically exploitative to radically preservationist. This continuum is best seen as varying according to the time frame over which the benefits and uses are judged.

Radical exploiters of resources use them in a way that damages or destroys their regenerative capacity. The mathematician/economist Colin Clark has shown that, under fairly common economic assumptions, corporate profits will be maximized by radical over-exploitation.