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Cost-Benefit Analysis and the Democratic Ideal

In traditional cost-benefit analyses of public projects, every citizen's willingness to pay for a project is given an equal weight. This is sometimes taken to imply that cost-benefit analysis is a democratic method for making public decisions, as opposed to, for example, political processes involving log-rolling and lobbying from interest groups. Politicians are frequently criticized for not putting enough emphasis on the cost-benefit analyses when making decisions. In this paper we discuss the extent to which using cost-benefit analysis to rank public projects is consistent with Dahl's (1989) criteria for democratic decision-making. We find several fundamental conflicts, both when cost-benefit analysis is used to provide final answers about projects' social desirability, and when used only as informational input to a political process. Our conclusions are illustrated using data from interviews with Norwegian politicians. JEL-codes: A13, D61.

Politicians and bureaucrats are much criticized, both by economists and others, for not adhering to the results of cost-benefit analysis (CBA) when making decisions. Political processes are influenced by lobbying, log-rolling and politicians' desire to be re-elected. CBA, on the other hand, seems to be regarded by some as a more objective procedure for ranking public projects, and perhaps even a more democratic one: After all, the analysis respects individual preferences, and every individuals' willingness to pay is given an equal weight in the analysis. For example, in discussing the alternatives to CBA, Hanley and Spash (1993) argue as follows:

“Not only is there potential for self-serving action here (so that bureaucrats act selfishly rather than in the public interest), but there is a danger that individuals may lose all control over the process, except in their capability to organize as a lobby group, and in the occasional, and very indirect, way of an election every four or five years. Therefore CBA might, to a degree, be considered to preserve the democratic alternative.”

However, to our knowledge, the relationship between CBA and democratic decision-making has received very little explicit attention in the literature. In this paper, we will consider whether CBA can be regarded

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as a democratic procedure for ranking public projects, by comparing the decision criteria implicit in a CBA to the criteria for democratic decision-making proposed by Robert Dahl (1989). Dahl's criteria are well-known and widely accepted among political scientists. However, these criteria describe a democratic ideal, and most actual decision-making processes fail to meet some of the requirements of this ideal. Similarly, most applied cost-benefit analyses contain crude simplifications and approximations, or methodological flaws. The scope of our paper will mainly be limited to an analysis of the *democratic ideal* and the *ideal cost-benefit analysis*.¹

We will first discuss the case where CBA is intended as a final decision-making mechanism. Currently, we know of no actual collective decision-making process in which CBA is actually decisive; but proposals about such procedures have certainly been made. One example is the bill proposed to the US Senate by Bob Dole and the Republican Party in 1995 (see US Congress, 1997), which would, if it had been approved, indeed make CBA decisive concerning new federal rules. We will then turn to the case in which CBA is merely used as one piece of informational input into a democratic decision-making process. Our conclusions in this case will be illustrated by findings from interviews with Norwegian members of Parliament concerning their use of CBA in an actual decision-making process (Nyborg and Spangen, 1996; Nyborg, 1998).

Since costless lump-sum transfers are

usually infeasible (Hammond, 1979), the theory of CBA requires that distributional issues are taken explicitly into account, by using welfare weights consistent with the ethical views of the decision maker (see, for example, Dreze and Stern, 1987). In applied CBA, however, such explicit weights are rarely used. In the following, we will limit our attention to CBA without explicit distributional weights, which we will call *standard cost-benefit analysis*.²

Criteria for democratic decision-making

The ideal for many political systems is to be a living democracy. As for most ideals, however, one can hardly expect to quite live up to it in the real world. In practice, one might want to picture the ideal of democracy along several dimensions. Our starting point in this study is the set of requirements for democratic decision-making proposed by Robert Dahl (1989). His criteria are as follows:

Effective Participation

This means that all citizens have the same opportunity to participate in the decision process, and to express their opinion. According to Dahl (1989, p. 109);

“Throughout the process of making binding decisions, citizens ought to have an adequate opportunity, and equal opportunity, for expressing their preferences as to the final outcome. They must have adequate and equal oppor-

tunities for placing questions on the agenda and for expressing reasons for endorsing one outcome rather than another”.

2. Voting Equality at the Decisive Stage

The second criterion is that in the final decision on an issue, each citizen has an equal vote:

“At the decisive stage of collective decisions, each citizen must be ensured an equal opportunity to express a choice that will be counted as equal in weight to the choice expressed by any other citizen. In determining outcomes at the decisive stage, these choices, and only these choices, must be taken into account” (Dahl, 1989, p. 109).

This does not necessarily mean that there must be voting equality in each stage of the decision process; but in the final stage, everyone has one vote.

This criterion builds upon the fundamental ideal of equality in the theory of democracy, postulating that all human beings are born with the same intrinsic value. It is further assumed that each individual is himself or herself the best judge of his or her own interests.³ These two premises lead to the conclusion that all adults are qualified to govern themselves, and moreover, they are equally qualified to do so.

Enlightened Understanding

To make a reasonable decision, one clearly needs factual information about the issue at hand. Hence, equal access to information is important:

“Each citizen ought to have adequate and equal opportunities for discovering and validating (within the time permitted by the need for a decision) the choice on the matter to be decided that would best serve the citizen's interests” (Dahl, 1989, p. 112).

The assumption underlying this criterion is that citizens do not initially know which decision they think is best for society. Rather, this is to be clarified through the democratic process. Thus, open public debate – implying liberty of speech – and equal access to information are crucial in a democracy.

Control of the Agenda

Finally, the citizens must control which issues should and should not be placed on the agenda of the democratic decision-making process:

“The demos⁴ must have the exclusive opportunity to decide how matters are to be placed on the agenda of matters that are to be decided by means of the democratic process” (Dahl, 1989, p. 113).

If issues of vital importance to the community can be kept outside of democratic control, the decision process is not considered democratic by means of Dahl's criteria. It does not help if the decision process seems to be organized in a democratic way, if people are only allowed to decide on unimportant issues.

Cost-benefit analysis as a ranking mechanism for public projects

In this section, we will analyze the case where

1. Thus, we will disregard the extensive problems associated with eliciting individual willingness to pay for non-market goods, which would obviously become even more prominent if CBA were to be decisive.

2. Below, costless lump-sum transfers are not assumed to be feasible. Ex post redistributions will be disregarded. However, any redistributions related to the project can be treated as part of the project description. Further, we will assume that all projects under consideration are marginal. For a presentation of the theory of cost-benefit analysis, see Drèze and Stern (1987).

3. A few exceptions are usually made from this rule, namely children and mentally retarded persons.

4. The demos are the participants in the democratic process.

CBA is intended as a *mechanism for making final collective decisions*. Most economists stress that CBA should be supplemented by other information. Nevertheless, we believe that the Republican initiative mentioned above demonstrates that CBA is sometimes regarded as a decision-making mechanism, not only as a positive piece of information. Below, we will go through Dahl's criteria for democratic decision-making one by one, and discuss the performance of CBA with respect to each of them.

Effective Participation

This is an aspect of democratic decision-making for which, at first glance, CBA performs particularly well. Although only a representative sample is usually included in willingness-to-pay-surveys, the basic intention is that the willingness to pay of *all* members of society should count equally. This feature is clearly attractive, especially when compared to some political processes in which lobbyists and politically powerful groups can have a substantial influence on final decisions, relative to groups who have no strong spokesmen. CBA does not only take into account those interests that are clearly articulated and forcefully agitated, but equally incorporates *any* individuals' willingness to pay.

However, this argument assumes that the concept of "preference" referred to by Dahl is identical to "preference" in the theory of CBA. In economics, an individual's preferences are formalized by her utility function, which represents her selfish interests (although altruistic concerns may also be included). In

the theory of democracy, however, "preference" or "interest" is frequently used to describe the individual's conception of what is good for society, corresponding more closely to the economic concept of a social welfare function than the utility function. Each citizen's ability to judge what is good for himself, for other citizens, and for the community, is a fundamental premise of democratic theory. It is such judgements, i.e. political views, which are supposed to be discussed in the democratic debate.

If "effective participation" is interpreted as a requirement that all citizens has an equal and adequate opportunity to express his views about what is *best for society*, rather than simply what is best for himself, the performance of CBA with respect to this criterion becomes, instead, particularly poor: Indeed, *no* citizen is given the opportunity to express his views about this. As Dahl (1989, p. 95) points out; "A's wanting to satisfy his desire for hamburger is certainly not equivalent to A's wanting the government to maximize his opportunity to eat hamburgers." In a CBA, however, one can measure an individual's willingness to pay for a hamburger; while it is hardly meaningful to measure his willingness to pay to ensure a policy maximizing his opportunity to eat hamburgers.⁵

It is sometimes claimed that the theory of CBA is general enough to allow for any kind of individual motivation. Nevertheless, while it is true that CBA allows individual utility to depend on others' utility, it is *not* general enough to capture situations in which individuals apply subjective social welfare

5. Note that an altruistic utility function is conceptually not the same as a social welfare function. Social welfare functions (social preferences) are devices for aggregation of individual utility (personal preferences), and for such aggregation to be meaningful, the social welfare function cannot itself be a utility function. An individual's social and personal preferences may rank social states differently (Sen, 1977, Nyborg, 2000), implying a conflict between personal interests and political/ethical views; for example, a more egalitarian society might reduce a person's utility if his current income is high, but he might still find egalitarianism ethically preferable. See also Sagoff (1988).

functions when asked to value a social change rather than using their utility functions (Nyborg, 2000). This would require a theory for cardinal and interpersonally comparable measurement of subjective social welfare perceptions, which is not provided by the standard theory of cost-benefit analysis. It is not obvious that such measures would be meaningful at all, let alone summing them up and interpreting the result as a measure of social benefits.

Voting Equality at the Decisive Stage

In standard CBA, the "vote" cast by each individual is her willingness to pay. In one sense, one might say that there is voting equality under this procedure, since each individual's willingness to pay is given an equal (implicit) weight in the aggregation.

However, there is an important sense in which voting equality does not hold for standard CBA. Under majority voting, each voter has exactly the same number of votes (under the simplest voting schemes, one). This means that the maximum support that any one voter can give to an alternative is equal for each voter. In a CBA, in contrast, the maximum support an individual can give is bounded by his budget constraint; implying that an individual who has a lot of money has, in effect, more votes than the individual with little money. This constitutes a serious violation of the principle of voting equality.⁶

Some may object that the requirement of voting equality would be met if distributional weights were introduced in the CBA, compensating for the individual income differences. Note, however, that having an equal *influence* is not necessarily the same as having one's *needs* taken equally into account.

In a democratic procedure, citizens can choose to use their influence to ensure that individual needs are given an *unequal* weight, for example by putting larger emphasis on the needs of individuals considered to be especially badly off. Further, one could easily imagine a benevolent dictator who gives the same weight to everyone's needs, but who is still a dictator in the sense that he himself makes all important decisions. Thus, a fair weighing of personal interests is not necessarily equivalent to a democratic procedure.

Enlightened Understanding

A narrow interpretation of this requirement is that everybody should have the same access to information. In a well conducted CBA, based on well conducted willingness to pay-studies, such a requirements may be met, as all respondents to willingness to pay-surveys are usually faced with the same questionnaires, containing the same information.

However, the criterion of enlightened understanding is based upon a line of thought which is very dissimilar from standard CBA. In a CBA, preferences are assumed to be exogenous, and the problem is to measure them accurately in a cardinal and interpersonally comparable way. The only information a citizen needs for this purpose is concerned with the causal relationships between projects and her own utility (i.e. to determine her informed preferences; see Harsanyi, 1997). Once each individual has reported her value, the socially best solution can simply be calculated, and there is no room for public debate in CBA as a final decision mechanism.

Hence, in a society where public decisions were made by strict use of the cost-benefit criterion, freedom of speech may be useful

6. It is sometimes argued that the choice of numeraire does not matter in CBA. This is, however, not generally true (Brekke, 1997). Even in those special cases where the choice of numeraire does not matter, CBA allocates more "votes" to those that are generally better off in the status quo.

for individuals' understanding of causal relationships; but would have a much less vital role than in the type of democratic processes Dahl seems to have in mind. Any ethical or political considerations are made once and for all by choice of the methodology. There is no room for a process towards a "reflective equilibrium", as discussed by Rawls (1971), in which one can test the soundness of one's own ethical principles by examining the actual consequences they have in different cases, and adjusting the principles if one finds that some of their consequences are unacceptable.

This would hold even if one attempted to aggregate political views rather than personal well-being in the CBA: Such aggregation would require an assumption that individuals' ethical views, not only their utility functions, are exogenously fixed, not affected by the political debate. Collective choice would then be determined by the greatest willingness to pay for a political view, not by the best argument. The problem remains that CBA is a tool for aggregation, not for discussion. In the theory of democracy, on the other hand, the discussion itself is considered to be important, since ethical or political preferences are regarded as endogenous to the political process.

We conclude, thus, that the condition of enlightened understanding is not *violated* by CBA. However, we also find it difficult to claim that the condition is actually *satisfied*, as the language of Dahl's criterion and that of CBA seems to originate from two totally different worlds. The point is that in CBA, this criterion is largely irrelevant, since preferences are not assumed to be shaped through public discussion. This irrelevance illustrates the fundamentally different

character of CBA as a decision-making mechanism compared to the processes one usually has in mind when discussing democratic procedures.

Control of the Agenda

Theories about democracy impose certain requirements on how a decision-making process is *organized*, not on which decisions should be arrived at. One interpretation of control of the agenda is that citizens should be free to emphasize not only efficiency, but also distribution, rights, and other concerns in their choice of final decision. With its sole focus on aggregate willingness to pay, CBA does restrict the type of considerations that can be taken into account. However, when it comes to deciding which projects are evaluated at all, the CBA methodology itself does not appear to introduce strong restrictions.⁷

Citizens may also decide, through a democratic process, that a particular type of decisions should be made according to CBA. This is an instance of demos delegating their power, which is not excluded by the requirement of control of the agenda. For example, citizens may want to use CBA for decision-making regarding certain public enterprises whose main goal is precisely that of efficiency. An important requirement would then be, however, that the citizens can withdraw this delegation of authority whenever they find it appropriate to do so.

Cost-benefit analysis as informational input to a democratic decision process

Most applied CBAs are not decisive for public choices, and they may not even be intended

as final answers to projects' social desirability. Rather, they are provided as *informational input* to a political process which involves many decision-makers, possibly among a large amount of other information regarding projects' consequences. It is then up to each individual decision-maker to decide if she wants to put any emphasis on CBA when evaluating the desirability of proposed projects. In such cases, CBA cannot be regarded as a decision-making mechanism. However, provision of adequate information to citizens is an important requirement for democratic decision-making. In this section, thus, we will discuss *CBA as informational background to democratic decision-making processes*. In this case, the criteria of Voting Equality and Control of the Agenda may seem less relevant. As informational input, CBA does neither determine who has a say in the final decision, nor on the issues that can be put on the agenda. Thus, we will focus on the two remaining criteria, Enlightened Understanding and Effective Participation.

Enlightened Understanding requires that each citizen should have access to information which enables him or her to arrive at a well-founded evaluation of the issue at hand, according to his or her own ethical or political preferences. The problem of identifying information which satisfies this requirement was studied in Brekke, Lurås and Nyborg (1996) and in Nyborg (2000b).⁸ As a starting point for the discussion, consider the extreme case in which CBA provides the only information available to decision makers, and in which only an aggregate indicator is reported for each alternative (net benefits, or a cost-benefit ratio, depending on whether public funds are limited or not).

In this case, all decision makers are able to evaluate alternatives according to their own ethical views if and only if 1) all decision makers agree that willingness to pay is an ordinal measure of an individual's well-being, and 2) all decision makers are socially indifferent to marginal redistributions of income between any two members of society, i.e. agree that the income distribution is socially optimal, and 3) all decision makers agree that no other aspect of the alternatives than their effects on individual well-being is important (Nyborg, 2000b).

These are strict requirements, implying a very high degree of normative agreement among decision-makers. If some citizens accept these normative premises, while others do not, citizens will *not* have "adequate and equal" opportunities to evaluate the social desirability of alternatives: Those who accept the normative assumptions can rank alternatives on the basis of CBA; those who do not accept the premises, on the other hand, may not be able to use the reported cost-benefit ratios or net benefits estimates at all. It is impossible, on the basis of one number only, to calculate what the evaluation would have been like, had it been based upon a different ethical foundation. Hence, if only cost-benefit ratios or net benefits are reported, citizens' opportunity to evaluate the alternatives is neither equal nor adequate (or rather, it is adequate for some citizens only).

Dahl's criterion of *Effective Participation* requires that all citizens have an equal and adequate opportunity to *express reasons* for their preferences about outcomes. Even for those who accept the normative foundations of CBA, it may be very difficult to articulate specific reasons why a particular alternative is

7. Note, however, that the theory of CBA only applies to marginal projects. "Marginal" is here taken to mean that any changes in relative prices due to the project's implementation are small enough to be disregarded.

8. Note, however, that in these papers, social preferences are assumed to be exogenously given; while in the theory of democracy, an important concern is that citizens' ethical and political views may change during the course of a public debate.

or is not desirable, if only aggregate information has been provided. For example, when confronted with a claim that a project will have severe effect on children's health, a cost-benefit ratio gives no indication of whether this is true or not. It is a final evaluation that has been provided, no specific *reasons* for this conclusion.

The assumptions that only aggregate indicators are reported, and that this is the only information available, are hardly plausible in most practical situations. Usually, analysts will report both aggregate indicators and more disaggregated information. If reasonably comprehensive descriptions of the alternatives are provided, this additional information may give sufficient information for *all* citizens to make their own, well-founded evaluations.

Note, however, that if the most useful information is the disaggregated part, it is not clear why one should use CBA in the first place, instead of a traditional impact assessment.⁹ The main difference between providing only a disaggregated list of consequences, or providing estimates of net benefits or cost-benefit ratios in addition to this list, is that in the latter alternative, an evaluation from a certain normative point of view is provided.

Is this harmful or useful, from the point of view of facilitating a democratic decision-making process? Our view is that it is not harmful *per se* – on the contrary: Freedom of speech is a fundamental part of democracy, and providing information about cost-benefit

ratios or net benefits estimates can be regarded as equivalent to arguing for a specific political point of view. That citizens take part in the public debate, each from their respective political viewpoints, is essential to keep democracy vital. Although a decision-maker may not, at the outset, agree with the normative premises of CBA, he may still find it interesting to know the conclusions reached by someone who does.

However, the criterion of Enlightened Understanding may be interpreted to mean that the government has a basic responsibility to provide factual information to its citizens and their representatives in the legislative assembly. To be democratic, a decision-making process must entail some mechanism for providing the most important information to every decision-maker. It is our opinion that providing estimates of cost-benefit ratios and/or net benefits is not part of such a fundamental responsibility.

CBA as informational input: Some empirical evidence

To our knowledge, there is no widespread practice of using CBA as a final decision-making mechanism. When it comes to CBA as informational input, however, experiences are more extensive.¹⁰ Below, we will summarize some results from a survey we conducted in 1995 among members of the Standing Committee of Transport and Communication of the Norwegian Parlia-

ment (Nyborg and Spangen, 1996; Nyborg, 1998), concerning their treatment of a long-term plan for national road investments (Ministry of Transport and Communications, 1993). The transport sector is the only public sector in Norway in which CBA has been used in a systematic fashion, and cost-benefit ratios are calculated routinely for every proposed national road investment project. We believe that these results illustrate some of the arguments made above concerning CBA as informational input to a political process.

One striking result from this survey was that attitudes towards CBA varied along the traditional left-right political axis, with politicians on the left being much more skeptical than those on the right. The two representatives of the Socialist Left Party did not appear to find CBA useful at all. Several representatives of the Labor Party, as well as the Christian Democratic representative (considered to be in the center), expressed varying degrees of uneasiness. On the other hand, the representatives from the Conservative Party and the Progress Party (right wing liberals) were typically much more positive. The most positive respondent was a Conservative, who apparently felt that if the methodology could be further improved, projects should fairly automatically be ranked according to the cost-benefit ratio.

To us, the problem did not seem to be a lack of understanding of the CBA methodology. For example, one of the Socialist Left representatives demonstrated a very thorough understanding of the method, and expressed his/her skepticism by pointing out several trade-offs generally implied by CBA that he/she did not approve of. Note also that the Socialist Left Party was the only party to propose a reduction in total road investments.

Hence, suggesting that leftist politicians lack concern for the scarcity of public funds can hardly explain our findings in this case.

To us, the most natural explanation, and the one that is most consistent with our data, seems to be that of ideological differences. One requirement for CBA to rank projects in accordance with a politician's normative views is that she is *indifferent to marginal redistributions of income* between any two members of society. Leftist parties have traditionally been very concerned about distribution issues, and have tended to emphasize the interests of the poor and low-income groups. Thus, CBA can hardly be expected to be consistent with the political views of leftist parties.

Such ideological differences may imply that the CBA methodology is not perceived as politically neutral. If no other information were available, this would clearly violate the requirement that everyone should have an equal opportunity to evaluate the alternatives. In the case of the Norwegian Road Plan, however, the decision process was organized in a way that allowed plenty of information to be communicated through hearings, travels, meetings, and so on. In addition, there were public debates in the media concerning many of the projects. It did not seem to us that those who were skeptical to CBA lacked the factual information they needed to make a judgement. However, the information they received was neither systematic nor impartial, and the effect of this is difficult to assess.

Several other studies have found little correlation between a priori estimated cost-benefit ratios and actual ranking of Norwegian national road projects (see, for example, Fridstrøm and Elvik, 1997). This has generally been regarded as a problem.¹¹ A

9. Moreover, disaggregated information is not always passed on to decision makers, even if they are included in the original research reports. For example, the Norwegian Directorate of Public Roads routinely calculates cost-benefit ratios for new road investment projects; but when the Ministry of Transport and Communication presents its long term plan for new road investment to the Parliament, total investment costs and the cost-benefit ratio has frequently been the only economic information provided about each project (Ministry of Transport and Communications, 1993).

10. In the USA, all federal agencies must prepare a Regulatory Impact Analysis, which is usually taken to mean a CBA, before undertaking any major regulatory action (see Hanemann, 1992). In Europe, cost-benefit analysis appears to be much less used than in the USA, although it is frequently applied in the transport sector (see Navrud, 1992).

11. See, for example, the newspaper commentaries to our original study by Hauglid (1996) and Aftenposten (1996).

popular explanation seems to be that politicians lack understanding of the method, or that they are mainly concerned about re-election, not about social welfare.¹²

In our study, most respondents reported that they found cost-benefit analyses useful. At the same time, most of them did not really seem to put much emphasis on these ratios when they actually ranked projects. This seems fairly inconsistent if one regards CBA as neutral efficiency indicator, as many economists appear to do. However, if cost-benefit ratios are regarded, instead, as the reported conclusions of a fictitious political actor, expressing his/her well-founded, but subjective evaluation, the above observation is less surprising.

This view on the role of CBA in a political decision process is consistent with many observations from our study. One important finding was that those politicians who actually used the cost-benefit ratios did not seem to use them for ranking purposes. Rather, they used cost-benefit ratios as a warning signal, indicating which of the projects from the large plan they needed to take a closer look at. After receiving more detailed information, however, politicians would evaluate the project according to their own discretion, which may not coincide with the CBA evaluation.

Another indicator for projects requiring political attention, which seemed to figure much more prominently than cost-benefit ratios, was *indication of local conflicts*. In fact, local people's views and the results of a CBA can be regarded as two pieces of information of a similar kind: Well-founded, but subjective opinions about the issue at hand.

Conclusions

When used as a mechanism for reaching final collective decisions, CBA implies several inconsistencies with Robert Dahl's (1989) criteria for democratic decision-making. One important conflict is that in CBA, "votes" are allocated according to the individual's budget constraint, which differs between individuals; while the principle of voting equality is fundamental to democratic decision-making.

When CBA is merely used as *informational input* to a democratic decision-making process, the main problem is that the method is not politically neutral. The political biasedness of CBA does not necessarily represent a democratic problem, however, since politicians are free to disagree with, or overlook, political statements they do not find convincing. Rather, it represents a reason to expect that the political importance of CBA will be limited.

If CBA is to be used as a final decision mechanism, there is in reality hardly any decisions left to be made by citizens and politicians. Consequently, the individuals who get the most influence are, in fact, those who design and apply the CBA methodology. This may of course be tempting for those of us who are economists. It does not, however, make the procedure democratic.

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12. Note, however, that if voters are concerned about social welfare, politicians seeking re-election would have to behave as if they were concerned about social welfare too (Mueller, 1987).