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PREFERRED ALLOCATIONS WITH
UNCERTAIN IMPLEMENTATION

Abstract. In generating preferred courses of action based on benefit-cost analyses, policy scientists usually take implementation for granted. This should clearly not be the case, for rarely is implementation certain. Implementation considerations should become an integral part of any benefit-cost analysis. Various viewpoint concerning implementation are possible: not all of them can be modelled. This paper incorporates some facets of implementation into a multiple-objective, multiple-program resource allocation model. Implementation is introduced in terms of the likelihood of program acceptability. An outline of a more general approach is also presented. The implementation-allocation model developed is applied to a small-scale example which illustrates the types of insights obtainable. The impact of uncertain implementation is seen to be significant.

I. INTRODUCTION

Most benefit-cost analyses are considered complete when 'best bet' programs with their preferred level of funding are identified. As is well recognized, translating preferred courses of action into final action is a difficult process. Yet policy scientists, performing the analyses, are rarely concerned with issues of program implementation: seldom are these considerations an integral part of their study effort. An underlying assumption pervades their analysis: implementation is assumed to be certain. Their benefit-cost conclusions must be in a conditional sense: "... are the preferred courses of action given that such actions are implemented." This is not to argue that policy scientists are necessarily immune to implementation issues. They generally consider those issues as falling within the bailiwick of others, and not their (proper) concern.

Should important issues of implementation remain outside the framework of benefit-cost analyses? I would argue no. However, incorporating implementation considerations into benefit-cost analyses is a difficult task. In the first place, the term implementation appears exceedingly simple; yet in an operational sense it is a multi-facet process. On one level, implementation can be viewed as a process in which consensus on a course of action is required. For example, a policy maker (e.g., an executive branch of government) has formulated a preferred course of action regarding the allocation of resources among programs. In translating the course of

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action into final action, other policy makers (e.g., a legislative branch of government) must be willing to support the preferred actions. For a variety of reasons, consensus on the part of the latter policy makers is not certain and cannot be taken for granted. A more complex view of implementation would include the following considerations. In a realistic sense, the policy maker in recommending his preferred course of action has at his disposal tactics which, more or less, control the degree of program acceptance on the part of other policy makers. Political resources can be expended to achieve outcomes more closely akin to the outcome desired by the policy maker proposing the course of action. (In a like fashion, political resources can also be expended by those policy makers opposed to the recommended course of action.) In addition to these views concerning implementation, there are still other important considerations. Implementation, in a broader sense, also includes the costs of implementing the preferred actions, the analysis of organization and informational changes necessitated by the actions, and the determination of a system of control to ensure that the expected accomplishments are met. Although these remarks concerning the multi-facet nature of implementation are not all inclusive, it is easy to see why policy scientists have not explicitly merged implementation considerations into their benefit-cost analyses. Yet implementation considerations have a distinctive effect on the structure of the initially preferred course of action.

The analysis here is an attempt to incorporate elementary implementation considerations into benefit-cost analyses. The basic model used, however, is an extension of conventional benefit-cost analyses. Most such analyses reflect the value of alternative program options by a single measure of program outcome, and rarely do they provide guidance for preferred resource allocation across a spectrum of social programs. The basic model used here determines optimal resource allocations to a spectrum of programs, each program having multiple outcomes. Moreover, the outcomes are considered to be 'counteractive': that is, an allocation of resources to any program results in an (anticipated) favorable impact on certain objectives whereas that allocation also results in an unfavorable impact on other objectives. (For example, many programs, when evaluated in terms of impact on environment, exhibit counteractive outcomes.) The inclusion of implementation considerations into the basic resource allocation model is straightforward as a first approximation. One can