

## Commentary

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In his paper, "The Cost-Benefit Dilemma," Professor Bromley has sketched a trace of the history of settlement and economic development of the arid and semiarid western United States, and the use of public investments in water resources development in the area, including the benefit-cost analysis concepts associated therewith. He has characterized the future as one of economic stability or contraction, with resource scarcity, political caution and inertia, and special interest activism.

Dr. Bromley has identified two conceptual problems in benefit-cost analysis:

1. The meaning of a surplus of benefits over costs and to whom the benefits may accrue—that is, the income distribution arising from public investment in water resources.
2. The effect of the project being analyzed upon the project factor and project output markets in terms of prices, quantities, and distribution of economic effects.

As Dr. Bromley sees these problems, the losers are seldom if ever compensated by gainers, and the potential project(s) will have marketwide effects that are not reflected in the project evaluation data. One has to agree that both of these problems exist, at least to some extent, under present practice. Dr. Bromley points out, however, that the basic problem is "that an efficiency calculus is being used to judge the desirability of public sector activities which change the distribution of economic and political advantage." This latter point, of course, focuses the issue directly upon the questions of purpose, role, and scope of public sector, and especially federal government

participation in water resources programs. I shall not join in that debate in this discussion, since to a large extent that decision has been and most likely will continue to be decided in the political arena, based on a wide range of both economic and social considerations. Instead, I shall confine my remaining discussion more toward the measurement aspects, if you will, of the methods of benefit-cost analyses of federal water projects. I do not feel that the analytic techniques of benefit-cost analyses can make the decision of "what ought to be" in regard to public versus private sector investment in water resources, any more than such analyses can perform this function for public transportation, public education, or public health.

Perhaps, as Professor Bromley has suggested, the "boom days of the 1940s and 1950s are probably past." However, I question this. Our population is still growing and our foreign trade is expanding. Thus, it seems to me, that the production of the resources of all areas of the nation will be as important in the future as in the past, both in relative and in absolute terms. Such production cannot be realized without adequate supplies of suitable quality water for the production processes in energy, manufacturing, agriculture, and the service industries; i.e., water is a factor of production. However, this factor of production is not available at the time and place it is now and will be needed in the future in order to produce and use other fixed location resources. *Therefore, the problem remains that of decisions pertaining to public and private sector investment schedules to accomplish the desired level and appropriate regional distribution of water resource services.* If the national economy fails to provide for maintenance and growth of the water supply and related sectors, through both storage and transportation of water, a critical factor of production will be unavailable, barring sufficient technological advancement to substitute for it. As a result, use of complementary existing and potential land, labor, capital, and mineral resources will be reduced or precluded altogether. Economic opportunity will be limited to an extent, resources that are freed should decline in price and become available for other purposes, and product prices should rise, other things equal, because supplies will have been reduced in a relative if not an absolute sense. This eventu-

ality, too, has its distributional effects upon producers and consumers, and in the views of many is an undesirable condition.

I am in substantial agreement with Professor Bromley that the present microeconomic theory of the firm, business analytic methods and data, as used in individual project benefit-cost analyses, is a poor tool when applied to public sector water resources investment decisions. It suffers a number of weaknesses in that it requires aggregation of large numbers of estimates of individual water user income accounts, which for large area projects are little more than first approximations because neither the method nor the data satisfactorily take into account the ultimate effects of the project upon the price variables of the factors involved. The method is also poor from the standpoint that it requires massive quantities of data, much of which is not available and the remainder of which is extremely costly in both time and money to obtain. In addition, present benefit-cost methods are too unwieldy to be easily understood by either the taxpaying consumer or the public policymaker. Present federal constraints upon the methods require that income effects in sectors and establishments, except those of the direct water user, be ignored on the assumption that the sectors indirectly affected have equivalent opportunities that can and will be exercised or are unimportant elsewhere in the economy. Likewise, no weight, except that inherently found in the price data used in the analyses, is given to consumer surplus derived from larger supplies and a wider range of commodities in the marketplace.

Dr. Bromley discusses the range of topics with respect to the interest rate to be used in computing the present worth of future benefits and costs. However, he fails to clearly relate the private versus public interest in long-range aspects of the benefits stream insofar as the interest or discount rate is concerned. At today's interest rates, the planning horizon or payout period for projects (water or other investments), must be quite short, ten to fourteen years at the most. It takes longer to plan and construct a modest size reservoir.

Dr. Bromley suggests that the public sector might accomplish desired objectives through rules and rule making without public expenditure. From an academic standpoint, this sounds good—

less costly to taxpayers. And if the taxpayers decide to do it this way, then we have no conceptual problems. However, there may be problems of transition to such a system, which to an extent existed prior to federal involvement in water projects. But that was during predevelopment. Maybe now that development has, shall we say, advanced, the private sector may proceed at the desired rate and at the desired locations to produce additional water resources services. The problem is to find the right rules, the right incentives.

Dr. Bromley reviews the problem of reallocation of water and points out that shifts in water use among sectors in the West hold important social and economic implications beyond the immediate users. He recognizes, that income and employment multipliers differ among users (agriculture vs. energy, for example) and that structural stability of the western economy (and I would add the national economy) over the long run is at stake. Having recognized this important factor, I wonder why the author did not proceed to show how economic structural relationships could be used to derive gross estimates of water demand, individual sector distribution of water demand and the potential production, waste load, employment, income, and tax base effects of reallocation of existing supplies and of new supply. Admittedly, such analyses suffer data problems akin to those mentioned earlier (much of the same data would be used), and they use average as opposed to marginal relationships, but in my opinion, economic structural analyses provide quite useful information that is more easily understood by the general public and the public policymaker. Such analyses are being done. The estimates show water resource needs in relation to other sectors. Once such estimates are obtained, then the necessary supplies can be obtained at the least cost, and the original estimates can be used as guides in allocating costs among all beneficiaries—direct as well as indirect water users.