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Economic Analysis and Federal Irrigation Policy: A Reappraisal: Discussion

James J. Jacobs

A quick review of water projects and "Principles and Standards" should demonstrate to the analyst that decisions are not based only, or even mainly, on efficiency analyses. This being the case, how could analysts adapt water resource analyses to provide the information needed to improve water resource decisions?

The focal question of Dr. Young's paper is, "How efficient has the public management of water been in allocating resources?" In analyzing this question, the three conclusions reached are that: (1) most irrigation projects in the past two decades were not economically profitable; (2) excess power revenues should go into the federal treasury rather than water projects; and (3) there is not a strong positive relationship between expenditures on water resource projects and economic growth.

The first conclusion is supported by fallacies in federal benefit-cost analyses of water resource projects. An old and continuing argument is the use of a low discount rate in federal benefit-cost analyses. While the present discount rate is 6-5/8 percent, federal water projects being built are based on a discount rate of 3 to 3-1/2 percent.

Another fallacy is that federal benefit-cost procedures tend to overestimate benefits and underestimate costs. In overestimating benefits, the two specific objections to procedures employed by the U.S. Bureau of Reclamation are: (1) failure to include an opportunity cost for family labor; and (2) no adjustments in inputs or commodity prices to accompany the

assumed increase in crop productivity. The author fails to mention the tendency to overstate secondary benefits of irrigation projects and the USBR failure to consider environmental impacts.

In general, I agree with the author's statements, but question whether USBR failure to reduce crop prices because of the overall increase in production has caused a major overstatement of benefits. To estimate the reduction of individual crop prices would entail a rather elaborate procedure. This estimation procedure would have to include such things as increases in production, price elasticities, demand and inflation. While increases in production would tend to reduce prices, a more important question is what effect these projects might have on the location of production. A prime example of this is cotton production in the U.S. Another side of the argument is the benefit consumers receive because of lower prices at the farm level. What proportion of the reduced price is due to irrigation and passed on to the consumer, and should this be included as a benefit in the benefit-cost analysis?

In addition to benefits being overestimated, the author suggests that costs are underestimated. His main argument here is that the market value of land does not reflect the true value of benefits foregone. I agree, but the problem lies in developing a procedure for calculating the social opportunity cost for such land. A large understatement of cost, which was not emphasized, is the practice of no interest charge on irrigation projects. It is perhaps the largest understatement of cost, for even with interest as low as 3-1/2 percent, the cost of the project would be about double.

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Another shortcoming of benefit-cost analyses, which the author does not mention, is the failure to incorporate inflation and uncertainty into the analyses. The failure to consider inflation has likely resulted in a further understatement of costs as well as benefits. Including uncertainty in benefit-cost studies would provide information on the distribution of estimated project results (e.g., benefit-cost ratios). This type of information should be most useful in the planning and decision making process [Mercer and Morgan].

The author concludes that if the above fallacies were corrected, the benefit-cost ratio for most water projects would be less than one, and therefore economically unfeasible. I agree with his conclusion, but doubt whether decisions on water projects are based solely, or even mainly, on efficiency criteria. This will be even more true in the future as multiple objective planning is implemented. Rather, decisions on water resources center on the distribution question, for example, who gains and who loses. The focal question of distributional impacts is two-faced in that the decisions are influenced by the distribution of political and administrative power as well as the distribution of benefits and costs. Economists, in general, have failed to adapt their analyses to the political system, and at the same time politicians have failed to provide specific objectives. Due to the lack of specific objectives, economists have concentrated on efficiency as the primary goal. As a result, economists have not been able to influence decisions as much as they feel they should have.

Federal cost-sharing and financing is the next major section of the paper. To me, there is a major relationship between federal financing of water projects and identifying alternatives. My argument here is that federal cost-sharing and financing have made the construction of water projects quite favorable from a local and state viewpoint. The subsidy provided federal water projects through cost-sharing and financing has led to a technical-structural solution to water issues.

By encouraging structural solutions, federal water programs limited the consideration of alternative means for dealing with water issues. Therefore, such issues as providing for water allocation and improving irrigation efficiency were shoved under the rug and more structures were built. While it would appear that irrigation efficiency would be easy enough to improve, in doing so a number of complex and emotional issues arise. For example, the "National Task Force on Irrigation Efficiency" pointed out that by increasing irrigation efficiencies, return flows would be reduced. This implies that the time of flow may be changed considerably so there may be insufficient water in the late summer months to meet minimum flow requirements, appropriated water rights, or both. Thus, water problems involve several complex issues which have to be considered for each alternative suggested to enhance the use of water resources.

The last section of the paper deals with the relationship between expenditures on irrigation development and regional economic growth. I find it difficult to believe that there is little or no positive correlation between expenditures on irrigation projects and economic growth. Due to the short time I had to review this paper, I was not able to investigate the studies cited, but let me make a few observations. First, several of the studies indicate that data used were for the 1950, 1960, and 1970 time period. I suspect that much of the increased economic activity due to irrigation projects had already occurred. Second, how was economic growth defined? For example, population may be a poor measure of economic activity. Third, how does one explain the difference between the economic activity in Weld and Morgan Counties and that in Yuma and Kit Carson Counties in Colorado? Finally, why not conduct an ex post analysis of some reclamation projects to compare project objectives with results?

In conclusion, researchers, administrators, and politicians need to work more closely in formulating policy directives so the information provided by researchers will be useful to

decisionmakers. Federal and state water planning and decisionmaking could be enhanced by the following: 1.) Provide a specific and identifiable set of goals for water programs; for example, minimum flow, recreation by type, efficiency, and so on. 2.) Formulate and monitor procedures for conducting benefit-cost analyses. This should include procedures for determining the distributional impacts of water resource projects. 3.) Require that project beneficiaries repay their share of project costs, including interest. 4.) Federal cost-sharing and financing be

applied to non-structural as well as structural solutions.

References

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