

Weapon system	Procurement cost, year 1	Operating cost, years 2 to 10	Total cost undiscounted	Total cost discounted at 10 percent
A-----	\$100	\$10	\$190	\$138
B-----	37	20	217	138

The best procedure may be to make clear exactly what the risks are, without necessarily trying to quantify them, so that he can decide how best to proceed.

Still another problem is an investment in a project which, though its success or failure may not affect the riskiness of private investments, is so very large that it probably increases aggregate risk because it is a risky project in itself. This is frequently the case in the Defense Department. In such cases compensation for the added risk may well be justified.

C. THE REDISTRIBUTION PROBLEM

Those who bear the cost of government investments may not be the same as those who receive the benefits. Government investment redistribute income within the economy, and many are specifically designed to do just that.

For example, the benefits of a flood control project may accrue mainly to the resident of the particular river basin, though the costs are paid by consumers and investors at large. Similarly, an investment in a program for the disadvantaged such as Head Start will benefit mainly the children who receive the aid but the costs will be widely shared. Many will argue that the discounting procedure, which implies that economic efficiency is the dominant criterion for choosing a project, should be modified when beneficial redistributions take place, perhaps through lowering the discount rate on projects which redistribute benefits in the "right" direction, or else scrapped altogether.

My own view is that this is a problem of analysis. If redistribution benefits are claimed for a program, these benefits should also be subjected to analysis. That is, a redistribution objective should be specified and the costs of alternative ways to achieve it compared. It may be the case that a project which cannot meet other tests of efficiency is also an inefficient way of redistributing economic welfare. Explicit analysis is, I believe, preferable to manipulating the discount rate and will lead to a much clearer understanding of the issues and alternatives.

D. PROBLEMS OF MEASURING BENEFITS

So far we have been talking about undifferentiated government investments whose costs and benefits can in principle be measured. In fact, there are many different types of government investments, and for many of them it is difficult or impossible to measure or compare the value of the benefits, even in principle.

For example, it is impossible to put a monetary value on the benefits of investment in a new defense weapons system. It is not possible, even in principle, to determine how valuable in monetary terms is our assured destruction capability against the Soviet Union or our ability to defeat Warsaw Pact tactical air forces in conventional combat in Europe, still less to put a value on improvements in those capabilities. For a different reason it is impossible to decide the market value of the protection a dike provides to a community, because the individual citizen cannot buy such protection for himself in the market; either everybody enjoys it or nobody enjoys it. Investments in post office facilities can, in principle, be valued because the private citizen could buy as much or as little postal service as he liked.

In situations where there is no market test of benefits, two types of analyses must be done. First, should we buy the service or capability, however we measure the benefits? Secondly, which of the alternative ways of providing this service or capability should we choose? Since this is the characteristic type of problem encountered in the Defense Department, it is worth discussing how we do it in more detail.

rate, DOD would be indifferent between them, since the present value of each cost stream at 10 percent is \$138. But suppose System B (while normally expected to perform as well as A) has a greater chance than A of *not* performing the mission. If, say, two percentage points are added to the discount rate for B, and its costs are discounted at 12 percent, while A is still discounted at 10 percent, System B will be procured, since the present value of its cost is \$128. Thus, the riskier system would be procured, even though System A is probably the better choice.