

to relate the average risk of peculiarly public programs to "similarly risky" investments in the private sector.¹

Moreover, although there are some reasons for believing that risk increases as the cost and benefit is farther and farther removed in the future there is no obvious reason to expect riskiness to compound in the way that the discount rate does, nor is there any very good basis for expecting similar degrees of risk or uncertainty on both the cost and benefit side. Also, when only the cost stream rather than a stream of net benefits is to be discounted, attempting to reflect differential riskiness among alternative projects may give the wrong signal. If the discount rate is increased to reflect higher risk, the present value of the cost stream will be reduced and the riskier project will tend to be preferred.

For these reasons, I believe it is preferable to use a riskless rate to discount cost streams in cost-effectiveness analyses, and to reflect risk in an increase in the expected year-by-year costs or a reduction in benefits. If, however, risk is to be handled in terms of the discount rate, a risk increment should be explicitly identified and added to the basic, riskless rate.

Treatment of Inflation.—Finally, the observed rates of return in the private sector in all probability include some allowance for inflation. Since most analyses of Government programs are and should be, I would argue, carried out in terms of constant dollar cost estimates, the allowance for inflation in the observed rates of return should be eliminated. Without such an adjustment to the discount rate, the calculation of anticipated benefits in constant prices would be penalized more than costs which generally are closer in time, and the resulting benefit-cost calculation would be inappropriately low.

THE CHOICE OF AN APPROPRIATE DISCOUNT RATE

At this point, unfortunately, it is very difficult to make the transition from the rationale for a discount rate to the choice of specific numbers. It would be expected that those economists who hold that the appropriate rate is determined by the rate of return on productive investment would choose a higher rate than those who favor a weighted average of both private productive investments and consumption foregone in the private sector, and that the second group, in turn, would choose a higher rate than those who favor a weighting by social preferences. It would not surprise me greatly, however, to learn that uncertainty in estimation outweighs the conceptual differences. On one point, nevertheless, I believe they would all agree and that is that the estimate of a long-term riskless rate reflecting a private opportunity cost should not be less than the current yield on Treasury bonds with long-terms to maturity. Many of them would, I am sure, choose a significantly higher rate. Because of the conceptual difficulties in identifying and applying a social rate of time preference and the estimating problems in determining a better estimate of the average private riskless rate, I believe that as a practical matter it is appropriate to regard the yield on Treasury bonds as a minimum value for the discount rate and, where it is relevant, to test the sensitivity of results to higher rates.

IMPROVEMENTS IN GOVERNMENT DISCOUNTING PRACTICE

Recently, of course, the Government has made significant progress in improving its evaluation of investment programs. Under the leadership of the Water Resource Council with the cooperation of the Budget Bureau, we now have a proposal to increase the discount rate used in water resource projects and to key it directly to the yield of Government bonds with long-terms to maturity. In addition, the Budget Bureau has, this year, provided guidelines on discounting for several agencies in other program areas as part of the PPB analytic process. These agencies were requested to apply discount rates of 10 percent in their analytic studies. Where it was believed that small variations in the rate would make a significant difference to the outcome of the analysis, they were also requested to test for sensitivity of the results to rates of 7½ and 12½ percent. The Department of Defense has also engaged in attempts to

¹ It may be argued that risk in private investments is expressed in the discount rate as opposed to reflecting risk explicitly in components of benefits and cost because the market in securities has no other way to treat riskiness. An individual investor's evaluation of risk which may run in terms of detailed predictions about the outcomes of particular investment projects of a company must ultimately be reflected in a price at which he is willing to buy the company's securities, which in turn implies some rate of return.