

the Saint Lawrence Seaway Development Corporation. The Coast Guard is just beginning to consider interest rates in its economic studies, and in a pending polar study it is using the rates recently suggested by the Bureau of the Budget.

Now to return to more general considerations affecting the position of the Department with respect to discounting, and to the net values derived therefrom:

1. The economics of safety

Probably the most widespread and pervasive set of responsibilities of the Department of Transportation are those related to transportation safety. These responsibilities extend all the way from air traffic control by the FAA to the Coast Guard's role in boating safety. And the most extreme form of the problem of safety involves an attempt to guarantee that there will be a future—not simply to apply a proper rate of discount to it.

Thus the investment of most general interest to the Department of Transportation is the individual's investment in his own life. And here it should be noted that standard discounting procedures for reducing larger future estimates to smaller present values may require at least some offset. For, in a dynamic economy, the average individual of a given age is worth steadily more through time. So the stream of future benefits to be discounted is not constant, but rising, even for just one hypothetical individual of constant age. Translated into investment policy, this means that we should constantly increase our outlays for a given assurance of saving human life.

Another corollary of the economics of safety has to do with the reduction of uncertainty. Most discussions of discounting assume a given degree of risk in comparing different investments. But the precise function of investments in safety is to reduce the risk of death or accident accompanying an individual's travel.

Therefore the most general aspect of the Department of Transportation's interest in discounting criteria is in connection with preserving our national investment in people.

2. The unit of investment decision

It is customary to assume that investment is either "private" or "public". Private investment is usually supposed to take place in an environment characterized by a considerable degree of competition, although it is often recognized that a business firm contemplating a new investment may bear in mind the dangers of spoiling the market by depressing prices with the additional units of output it expects to produce. But public investment is usually expected to be monopolized, in the sense that it is performed by something called "the government" which is responsible for the investment decision and all its consequences. Finally, there is no body of economic discussion relating to the special problems of competing public and private investments—railroad way and structure versus highways, or, in a much more limited sense, some railroad way and structure versus airports—nor is there any received economic doctrine with respect to the complementary relationships between private investments such as planes or motor vehicles and public investments such as airports or highways. This section of my comments will sketch in only a few of the anomalies which result from these divisions of investment responsibility.

a. Multiple decision-making in public investment

Due to the Highway Trust Fund, the United States has now come within sight of a nationwide express highway system built to minimum standards in accordance with an articulated plan. Federal funds were available for highways for a generation before the Highway Trust Fund was created. But state and local governments still receive the lion's share of the funds derived from taxes on automobile and truck use; and state and local governments dominate in providing both the funds and the criteria for new highway investment. This dominance in determining criteria is especially marked if we believe that the Interstate Highway System, with 90 percent Federal financing, confers general benefits which are hard to quantify, while projects of more local significance may be more susceptible to detailed economic analysis.

This multiple decision-making has produced sharp contrasts in discounting policies. As I mentioned, a number of states use zero discount rates in the process of determining the costs and benefits to be expected from new highway investment. Other states use discount rates over the entire range from zero to eight