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SESSION THREE

ECONOMICS OF AIR SAFETY

BY RICHARD J. BARBER†

THE DEVELOPMENT and management of a national air transportation system present many distinctive characteristics; but in the final analysis it is no different than any other government programmatic challenge. It involves the explicit articulation of program goals, the identification of the means by which those goals can be obtained, and a selection of program ingredients taking into account pertinent economic and social constraints. This analytical framework is really the only intelligent way to go about making decisions that involve the use of our resources. I recite these guidestones, not to beleaguer you with a litany of basic truths, but rather to put the question of air safety in a context suitable for rational treatment. Of the many dimensions of government air transportation policy, safety, more than any other concept, can impede deliberate decision-making and substitute emotion for sound analysis. Safety is only one among several worthy goals for public policy. It cannot be viewed apart from the total air transportation system; its pursuit must involve the same comparative consideration of relative costs and returns on investment as are true of any other government undertaking.

The usual approach to air safety reflects the same philosophy that the labor union pioneer, William Green, once declared to be his operative principle in collective bargaining: "More." Exactly what this means—how we are to quantify or state in objective terms the meaning of "safety"—is rarely defined. Speeches, trade journal articles, and editorials simply proclaim that when it comes to air safety the government should do "whatever is necessary" and spend "whatever it takes" to achieve "safety," a result that is often shrouded in the mist of generality. There are, of course, many champions of air safety, and no foes. But safety, like other concepts, has to be reduced to objective terms.

What do we know about safety? For one thing, there has been a long-term trend for the nation to become "safer" in terms of the number of "accidental" deaths in proportion to population. If one looks at transportation, he finds that deaths relative to numbers of passengers or vehicle miles have gone down in the last several years. Indeed, the total number of aviation-related fatalities falls somewhere below the number of accidental deaths due to any one of the following: poisons, suffocation, inhalation of poisonous gases, accidental discharge of firearms, drowning, falls, or fires. They are about 1/35th of automobile-related deaths. These data would suggest that transportation is quite "safe." However, transportation, in all

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its forms, is the major cause of accidental death in the United States. Among the various forms of transportation, aviation fatalities rank first in terms of deaths per passenger mile. That might be interpreted to say that aviation is "unsafe." However, if one examines death rates for scheduled airline operations, air transportation appears to be considerably safer than either automobile or rail transportation. These statistics suggest that we do not now have any simple yardstick by which to measure "safety" or to make comparisons between different types of transportation or forms of economic activity. While in the abstract "safety" is a desirable objective, it is a very elusive thing when considered in practical terms. Therefore, "safety" in the abstract is essentially non-operational as a guide to policy making.

Were a reasonably precise definition of safety as a policy goal to be discovered, its achievement would be susceptible to a far wider range of approaches than have been seriously considered in the past. To date, aviation policies have tended to take the existing aviation system for granted. They have assumed that the airspace is a free good and that there is to be no constraint on the amount, mix, or priorities among aircraft users. Efficient, "safe" management of the airspace has been a question of the artful use of capital equipment. With this as a premise, the basic aim of government policy has been to separate aircraft, primarily through the rules of the road and also through electronic surveillance. By and large the system has worked quite well, although at enormous and rapidly accelerating expense. Indeed, the government now spends almost \$1 billion a year on aviation.

The projected increase in air traffic and the enormous expansion in types of aircraft, notably for general aviation, raise grave questions about the adequacy and fiscal integrity of the existing system for the future. In 1967, air route traffic control centers handled 15 million aircraft; by 1973, they must plan to handle 30 million aircraft. To cope with this volume of traffic, and with the 150,000 aircraft to be in operation by 1973, would, consistent with present policies, call for a massive, multi-billion dollar investment in electronic surveillance apparatus. While such expenditures should not in themselves deter their careful consideration, and while increased user charges could help mitigate their impact, attention should be given to other means by which the airspace can be managed.

What other means might be used? One alternative technique is regulation. Considerable regulation already exists, but it has not been consciously employed in a way to achieve the greatest use of the airspace by the largest number of users. Indeed, it can work just the opposite. For example, a recent regulation restricts the speed of commercial jet aircraft to a maximum speed of 250 knots per hour below 10,000 feet. This may impose a substantial economic penalty on commercial air travelers. Another choice might have been to separate commercial jet aircraft and comparably equipped private aircraft from other types of aircraft. The conscious use of regulation to give preference to common air carriers as opposed to most segments of general aviation should be given more attention than it has been in the past. The explicit segregation of aircraft by type, by use, by

number of passengers, by time of day and day of week, by airport, and by route segment could yield more efficient use of the airspace by more people with less additional capital investment than is the case with existing policies. What this would amount to is a deliberate trade-off of regulation for capital investment.

A variation on the regulatory approach would have even greater appeal on economic grounds. It would impose a charge for the use of the airspace that would, in one way or another, vary with the willingness and ability of the user to pay. The notion is hardly new. Something similar to it is reflected in proposals that the FCC auction off licenses for television; the idea has been discussed by transportation economists. A possibility is that portions of the airspace could be auctioned off, with the highest bidders being given the right to use such "slots" in the system as were available. This would assume that not everyone should be served on a "first-come" basis and would constitute a basic step in treating the airspace as a costly resource which should be "rented" to those who are willing to pay for it rather than a free good available to all comers.

What is suggested is that the continued increase in investment in electronic equipment to monitor the airspace may not represent the only or the best technique for its management. Not only may other approaches be more efficient but in a time when budget dollars are becoming increasingly scarce and subject to intense competition among a wide range of public purposes, they may be imperative.

Only by treating the air system as other than given and by viewing the airspace as a valuable resource whose use can be allocated among users by non-electronic means as effectively as by radar and ILS can we sensibly establish criteria for the use of tax dollars that will yield an aviation system that is both safe and that serves our multiplicity of social and economic objectives.