

ROUTE ASSIGNMENTS AND THE C.A.B.

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Background and Introduction

In 1938 Congress passed and President Roosevelt signed into law the Civil Aeronautics Act which established the Civil Aeronautics Board (the C.A.B.). The Board consists of a five-man body appointed by the President with the consent of the Senate. Each member serves a six-year term and may only be dismissed for serious causes. The C.A.B. has six main controls on civil aviation, this note focuses on but one of these—the C.A.B.'s responsibility to decide how many and which operators are scheduled on designated air routes within the United States.

This facet of the C.A.B.'s operation has been a recurring problem, particularly since 1951. As commercial aircraft have increased in speed and capacity, it has become increasingly apparent that only the major routes in the air-transport network spanning our country will be profitable. However, the trunk or feeder lines are socially valuable to our mobile way of life, and the C.A.B. has sought to maintain them.

In its endeavor to avoid extinction of these unprofitable low-passenger-density routes, the C.A.B. has proposed and implemented numerous subsidy techniques. These subsidies have covered the spectrum from direct government subsidy, to the construction of integrated route patterns that, in effect, produce internal subsidies within the involved airlines.² In this note we will suggest a route allocation mechanism that satisfies this responsibility in a socially desirable (efficient) fashion.

Defining the Routing Problem

Between any two nodes in the air-transport network, the C.A.B. specifies the desirable flight frequency. These frequencies are specifically based on the characteristics and interdependence of the cities in question.³ In this sense we will speak of a given number of flight assignments that are

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1. For further background on the C.A.B.'s responsibilities, etc., see Corbett [1].
2. See Corbett [1] for further comment concerning the C.A.B.'s indecision on this routing issue.
3. This flight frequency route decision must be approached as a system or network optimizing problem; increasingly, considerations of airport congestion are influencing this specification (e.g. see Ferrar [2], and Levine [3]).

required by the C.A.B. in any time period for each network route. Alternatively, we will model the C.A.B.'s routing responsibility as the distribution of these "route permits" among the airlines.

Route-Permit Allocations

The C.A.B. by specifying the flight frequencies over the various routes defines an inelastic supply of route permits which *must be* distributed among the nation's airlines. Fundamentally, we propose the C.A.B. sell or lease these permits at a price which reflects the profitability of operating over these routes.

The airlines form the demand side of this permit market. It is expected that due to the economic rent associated with certain route assignments the bidding will be intense, whereas it will prove to be slack or virtually nonexistent for others. For example, route licenses that are associated with high-density travel will doubtlessly attract the interest of many airlines due to the profitability of such operations. Similarly, the trunk-line licenses will experience slack or no demand for their ownership.

But this characteristic of airline preference being related to profit potential is in no way different from what we presently experience in the industry. Moreover, due to the vagueness of the current operation these preferences tend to prevail at the expense of the C.A.B.'s welfare criteria. In the following section we will modify our system in a manner which will eliminate these troublesome characteristics.

Redistribution of High Density Route Revenue Throughout the Air-Transport Network

The route permit marketing structure for the C.A.B.'s operation will have the pleasant feature of recouping the economic rent available in the airline industry. By marketing these licenses and collecting the equilibrium price the C.A.B. will obtain revenue support for its operation. However, we have the following persistent problem: How is the C.A.B. going to induce the scheduling of the nonprofitable trunk-line routes?

As we implied earlier by suggesting that the "price" of these permits should reflect the "profitability" of operating over the involved routes, we are about to define a subsidy (or negative market price) for these excess-supplied licenses. By providing a market-determined subsidy to the airlines which accept the responsibility of supplying these socially desirable though unprofitable routing assignments, the C.A.B. may induce their supply.⁴

4. The most recent C.A.B. subsidy scheme, low-bid-trunk-line subsidies (as reported in

In effect we have described a rent transfer throughout the air-transport network. That is, we have developed a mechanism which defines a socially efficient redistribution of the economic rent available in the nations airways.⁵

Summarizing Remarks

In this note we have advocated a route assignment allocation framework to fulfill the C.A.B.'s most controversial responsibility. By utilizing a route-permit market the C.A.B. may both recoup the available transport rent factor on high-passenger-density routes and reduce the potential for self-interest pressure influence on its operation. Moreover, we observed that in this market structure there would tend to be a lack of bids for the permits earmarked for low-passenger-density routes. In this respect our structure defined the appropriate subsidy as a market transfer of the realized rent; this subsidy for inducing these socially desirable services appeared as a negative equilibrium price for such permits.

Fundamentally, the transport industry exists to modify the time-space characteristics of our society. This proposed route allocation system adapts this industry structure in the interest of social welfare. It seems appropriate that the rent derived from certain characteristics of our spacial distribution should be used to implement the modifications necessitated by other peculiarities of our demographic lumpyness.⁶

the *Wall Street Journal* [4]), is not too different from that here suggested; however, we have argued that the revenue support for such a program may be derived from the available economic rent inherent in the nation's transportation network.

5. Of course, the magnitude of the required subsidy and the obtainable rent would have to be compared to determine if this system would be totally self financing.

6. This view of the derivable rent being associated with demographic lumpyness could be used to argue for the transfer of the obtained funds to other forms of national transit (e.g. the railroads).

Bibliography

7. Corbett, David, *Politics and the Airlines*, University of Toronto Press, 1965.
8. Ferrar, Terry A., "A New Approach to the Airport Congestion Problem," Unpublished manuscript, June 1971.
9. Levine, Michael E., "Landing Fees and the Airport Congestion Problem," *Journal of Law and Economics*, April, 1969.
10. "C.A.B. Plans Competitive Bidding, Subsidies to Improve Service to Small Communities," *Wall Street Journal*, January 31, 1972, p. 7.

