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George Eads

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# THE EFFECT OF REGULATION ON THE COST PERFORMANCE AND GROWTH STRATEGIES OF THE LOCAL SERVICE AIRLINES

GEORGE EADS\*

*In this article Professor Eads concludes that the performance of the local service carriers has fallen far short of the goals established by the Civil Aeronautics Board when this carrier group was established in the 1940s. He traces the blame for much of this failure to faulty government regulation. He observes that the quality and quantity of airline service provided to the smaller communities that depend solely on the local service carriers for their certificated air service has deteriorated over the last ten years while the cost to the federal government of providing this service has increased.*

*Professor Eads feels that the government has four options: (1) end the local service subsidy altogether; (2) pay the local service carriers subsidy sufficient to compensate them for the services they provide to smaller communities using whatever aircraft they choose and accept the much higher subsidy bill that inevitably will result; (3) encourage local service carriers to subcontract certain of their routes to air taxis; or (4) permit the CAB to try a new scheme of subsidization involving competitive bidding for the right to provide stated quantities of service. Professor Eads prefers the fourth option believing it will result in superior service at substantially lower cost, but he points out pitfalls that may prevent such a scheme from working in practice.*

## I. INTRODUCTION

**I**N A DECISION dated July 11, 1944, the Civil Aeronautics Board, announced that it was initiating an "experiment" to expand air service to the smaller, more isolated communities of the

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\* B.A., University of Colorado; M.A., Ph.D., Yale University. The author is currently serving as Special Economics Assistant to the Assistant Attorney Gen-

country notwithstanding “. . . the traffic potential at small cities is not encouraging.” The CAB proposed to accomplish this expansion by creating a new group of “feeder” or “local service” carriers specializing in short-haul, low-density air service rather than through the use of the sixteen certificated air carriers then in existence. The first of these carriers was Essair (later called Pioneer Airlines), which began operations on August 1, 1945, flying a single round trip per day over a route linking Houston and Amarillo, Texas with intermediate stops at Austin, San Angelo, Abilene and Lubbock. Essair used the nine-passenger Lockheed L-10 Electra, an aircraft designed specifically for short-haul, low-density feeder-type operations. By the end of 1945 Essair had carried 4,452 fare paying passengers over this route. By 1970 the nine local service carriers served 453 cities and carried twenty-seven million passengers using aircraft having an average seating capacity of seventy. The smallest aircraft in general use among them by the end of 1970 was the forty-passenger turboprop-powered Fairchild F-27. Concerning this quarter century of growth, it has been remarked:

Any way you cut the picture for analysis you come up with the final conclusion that the experiment to expand scheduled air transport services into the smaller communities of the nation 25 years ago has been a monumental success—a classic case of enlightened federal policy in partnership with typical . . . businessmen operating under the most productive free enterprise system in the world.<sup>2</sup>

The thesis of this article is that the primary “success” of the

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eral, Antitrust Division while on leave from Princeton University where he is an Assistant Professor of Economics.

This paper was written prior to his assumption at his current position and in no way should be construed as representing the official views of the United States Department of Justice.

As this article was going to press the CAB announced that it would seek permission from Congress to undertake an experiment of the type outlined in Professor Eads' option four. To support its position, it released a three-volume study titled *Service to Small Communities* conducted by the staff of its Bureau of Operating Rights. This study, performed completely independently of Professor Eads' work and not made available outside the Board prior to its official release, identifies the same problems with the current method of subsidy payments as Professor Eads does in this article and reaches many of the same conclusions as to what could be done to improve the subsidy program.

<sup>1</sup> *Investigation of Local Feeder and Pick-up Air Service*, 6 CAB 2 (1944).

<sup>2</sup> Editorial, *Needed: Jet Age Decisions*, FLIGHT MAG. 21 (June, 1969).

“local service experiment” has not been provision of efficient short-haul, low-density air service, but rather the creation of nine weak trunkline carriers. This “success” has cost the taxpayer approximately one billion dollars in direct cash subsidy payments; additional trunklines, if that is a worthwhile goal, could have been accomplished at little or no cost to the taxpayer merely by relaxing the CAB’s long standing prohibition on direct entry into the trunklines ranks—a prohibition that has not allowed an entry since the Board was created in 1938. Thus, this article will argue that the service provided to smaller, more isolated communities has been more costly and of lower quality than was necessary and that this is in large measure the result of the regulatory policies of the CAB. Moreover, this analysis leads to the proposal that subsidy to the local service carriers be phased out over a short period and that the local carriers be allowed to drop service to any points they desire. In the relatively few cases in which federal subsidy for local air service could be justified because of the geographic isolation of some small communities, service could be provided either by air taxis under subcontract with local service carriers that directly contract with the federal government to perform specified services in return for lump-sum subsidies. Adoption of these proposals should substantially reduce the total amount of local service subsidy while improving the quality of air service to smaller communities. It would end the CAB’s economically inefficient (and as yet unworkable) policy aimed at internalizing the local service subsidy by using profits generated on longer-haul routes to cover losses incurred on shorter lower-density routes. This would also eliminate one of the major reasons for continued control over entry into the airline industry and would remove some of the pressure that is building for regulation of the now unregulated scheduled air taxis.

## II. THE BEGINNINGS OF THE “LOCAL SERVICE EXPERIMENT”

When the CAB decided, in 1944, to undertake a significant expansion of the nation’s air transport network it faced a choice of deciding how to accomplish this expansion. At that time sixteen air carriers were already certified under the “grandfather” provisions of the Civil Aeronautics Act of 1938.<sup>3</sup> There were also on

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<sup>3</sup> 72 Stat. 754, as amended 76 Stat. 143, 49 U.S.C. 1371 (1964).

file several hundred applications for certification of new "feeder" air carriers, which would engage primarily in the provision of short-haul, low-density air service. The Board's examiners cited five factors favoring the use of existing rather than new carriers to provide the new services:

1. The additional overhead expense involved in extending the routes of existing carriers would be less than the overhead expenses incurred by a separate enterprise;
2. The existing carriers, at least in some instances, would be able to operate a local route which might be unprofitable in itself by absorbing such losses with profit from long-haul services. In this respect it was pointed out that the revenue from a passenger pick-up at a "local" point and continuing beyond a terminal of local route would be available for the entire journey to the existing carrier, whereas only that part for the local transportation would be available to a local operator;
3. Greater utilization of equipment would be possible;
4. The experience of existing carriers would be available for the air transportation needs of the small cities; and
5. The quality of service in general would be higher if existing air carriers provide it. In this connection specific reference was usually made to the larger and more comfortable equipment that would be used, and the fact that day and night, all-weather service would be provided, as contrasted with the proposals of some new carriers to use smaller equipment and, at least at the outset, to limit operations to a contact basis.<sup>4</sup>

Despite the apparent advantages of using existing carriers, the examiners recommended (and the Board concurred in the recommendation) the creation of a new class of specialist "feeder" carriers. While examining the air service potential at smaller communities, the examiners investigated the extent of patronage at small cities already certified to receive air service. In September, 1940, eighty-eight cities of less than 50,000 population had been served. The eighteen of these cities below 10,000 population averaged only 4.0 arriving and departing passengers per day; the thirty-one cities in the 10,000-20,000 population range averaged 5.7 passengers per day, and the thirty-nine cities with population between 20,000 and 50,000 averaged 13.4 "in and out" passengers

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<sup>4</sup> Service on a "contact basis" was a mail pick-up service using a hook attached to the aircraft so that an actual landing was not required. 6 CAB at 29-30.

per day.<sup>5</sup> The need for a high level of government subsidy seemed obvious if patronage was to be so low to make service to these cities viable unless the carriers providing "feeder" services managed to achieve substantial operating cost savings. The Board believed that the best chance for obtaining savings was in the use of new carriers. It concluded:

Most of the presently operating air carriers also urge as a reason for putting small cities on existing routes the fact that the service will be provided with the type of equipment used on long-haul routes. . . . While some of the existing carriers indicated an intention to utilize different types of flying equipment, presumably smaller in size for some services, progress towards the fullest expansion [of air service] will be quicker if more emphasis is placed on adding a large number of small cities and developing equipment suitable for rendering service, rather than placing emphasis on the addition of points that can be given service with large equipment. . . . The various proposals described in that part of this report relating to the proposals of new carriers . . . have the common characteristic of emphasizing economy and less luxurious standards of service. This characteristic must be constantly emphasized, and the more progress that is made in this direction the more prospects for air service will be created. Any substantial economy of operation will have to result from departures from the existing type of service. It is reasonable to assume that necessarily different standards of operation can best be developed by new carriers, organized for such a purpose.<sup>6</sup>

In the subsequent cases in which feeder routes were established, the Board maintained this policy irrespective of contentions by trunk carriers that they too could achieve cost savings in the operation of feeder-type services.<sup>7</sup>

### III. METHODS AND EFFECTS OF SUBSIDY PAYMENT

The CAB created a separate group of feeder air carriers hoping to minimize the cost of feeder services. However, the Board's subsidies and regulations insured that the feeder services would not

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<sup>5</sup> *Id.* at 13-14.

<sup>6</sup> *Id.* at 52-53.

<sup>7</sup> In the Florida Case, 6 CAB 765 (1946), for example, National Airlines proposed to affect such reductions by eliminating all ground station personnel at certain points and having the co-pilot sell tickets and load luggage. The Board refused to be swayed by National's proposal and instead awarded the Florida feeder routes to Florida Airways, a new "feeder" carrier.

have minimum costs. When deciding upon the method that subsidy should be paid to the feeder carriers, the Board was faced with a dilemma. Wildly fluctuating financial results during the initial months of operation provided no basis for judging subsidy need. Yet the Board believed that to base the performance of the feeder carriers using trunkline experience as a yardstick, would lead to misleading results. It therefore adopted an "open" subsidy rate. Each carrier was allowed to draw only enough subsidy to cover its operating costs and to pay interest on its debt. When the carrier and the Board thought that enough experience had been accumulated to reflect an accurate picture of operations, they were to negotiate a "final" rate that would apply until either the Board or the carrier decided to reopen the negotiations. At the time of settlement, the Board was to scrutinize the costs incurred while the carrier operated under the "open" rate and disallow those costs that were the result of "honest, economic, and efficient management." Also the Board would pay the carrier a seven per cent rate of return on its investment for the time it had been operating under the "open" rate.

Several unfortunate results arose from this method of subsidy payment. First, the use of "open" subsidy rates resulted in a virtual "cost-plus" method of subsidy payment, which the Board itself admitted was unsatisfactory, stating ". . . a method of mail rate determination patterned upon a 'cost-plus' system would tend to destroy a carrier's incentive to maintain costs at a reasonable level. . . ." Theoretically the knowledge that the Board could later scrutinize a carrier's books and disallow costs that it felt were inconsistent with standards of "honest, economic, and efficient management" should have tended to offset any adverse incentives. In practice, however, the Board's disallowal powers proved merely annoying to the carriers but nothing they feared greatly. Once a carrier undertook to expand its schedules or acquire a new fleet of aircraft, it incurred the costs associated with that decision; for the Board several years later to demand a refund of subsidy paid to cover such costs would be for it to force the carrier into in-

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<sup>8</sup> *Essair, Inc., Temporary Mail Rate*, 6 CAB 687, 690 (1946).

solvency.<sup>9</sup> This the Board was reluctant to do.<sup>10</sup> Thus, while disallowals affected the rate of return earned by a carrier and were of concern to the carriers, the Board was powerless to impose cost consciousness upon the local service carriers with any degree of severity if it wished to keep them in business.

While the "cost-plus" feature of the subsidy system tended to lower the cost consciousness of the local carriers, the mechanics of the subsidy payment system introduced a bias in relative factor choice into the carriers' equipment purchasing decisions. A local service carrier on an "open" subsidy rate reported its net earnings and rate of return on investment on the basis of subsidy actually received from the government. However, this amount did not include provision for a rate of return; it was also subject to the *ex post* adjustment process previously described. Although a carrier could list subsidy it considered due it (including that portion represented by the seven per cent rate of return on investment guaranteed by the government) as an account receivable, at the same time, it had to inform stockholders and other potential investors of the fact that this figure was subject to substantial uncertainty pending the outcome of negotiations between the carrier and the CAB. As a result, investors, unwilling to bear this increased risk without compensation, demanded higher interest rates from the local service carriers and imposed conditions on their loans that had the effect at raising the cost of borrowing.<sup>11</sup> The carriers'

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<sup>9</sup> See KIMBALL, *For Locals, Inefficiency Can Pay Off*, AM. AVIATION 54-58 (Aug. 1958).

<sup>10</sup> The only case where the Board took and held a firm position against the acquisition of excessively large equipment occurred in the Pioneer Air Lines Mail Rate Case, 17 CAB 508 (1953). Pioneer had acquired a fleet of Martin 202's to replace its DC-3s primarily to attain equipment partly with the trunklines with which it competed. It was acknowledged that the use of the aircraft would result in a substantial increase in Pioneer's subsidy need, at least in the short run. The Board refused to approve the necessary subsidy increase and Pioneer was forced to dispose of its Martin 202's and reacquired its DC-3s. Soon thereafter Pioneer merged with Continental, a trunkline competitor. The Board came under strong industry and Congressional criticism for its actions in the Pioneer case and in following cases approved subsidy increases resulting from the acquisition of larger aircraft. See Henzey, *Locals to Get Aid in Buying New Fleets*, AM. AVIATION 92-93 (Feb. 1956).

<sup>11</sup> Vaughn has documented the difficulties that this method of subsidy payment caused for one local service carrier. R.H. Vaughn, *A Financial Assessment of the Class Mail Rate Subsidy Formula for the Local Service Airlines*, 51-52, June 1, 1963 (unpublished thesis in Rutgers University Library).



choice of aircraft during the effective period of this subsidy system illustrates the impact it had upon their operations. The first feeder carrier, Essair, began its operations with an aircraft especially designed for short-haul, feeder-type operations. Within one year, however, Essair sold its Lockheed L-10 Electras and acquired 24-passenger DC-3's. These aircraft were considerably more expensive to operate than the Electras, but they were acquired in part because Pioneer was having to deny service to passengers at certain times of the day on certain routes<sup>13</sup> and in part because Pioneer's route structure allowed it to compete with trunk carriers, which used DC-3's. Pioneer applied to the CAB to sufficiently increase its subsidy to allow it to operate its DC-3's. The Board, while declaring the DC-3 "inherently uneconomical for local air service," nevertheless approved the increase, citing estimates provided by Pioneer of the planned cost savings achieved by the use of the aircraft. The Board in effect ignored these proposed economies, stating that "we believe that more can be accomplished by leaving the details [of economies to be affected] to the ingenuity of the operators."<sup>13</sup>

Accordingly by 1949 the great majority of the local service fleet consisted of DC-3's, as a result of the decision to subsidize operating costs of excessively-large equipment.<sup>14</sup> The other amenities familiar to trunk-line travelers accompanied the DC-3's. As one dissenting Board member wrote in a 1951 renewal case:

[A]s of today, the original experiment is unrecognizable. Most of the local carriers now in operation perform services identical to those of the trunk lines. They operate DC-3 equipment, provide stewardess service and all the 'trimmings'. The emphasis on economy in operations has been lost sight of. . . .<sup>15</sup>

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<sup>13</sup> No rational transportation company seeks to have capacity sufficient to meet all peak levels of demand on all its routes, as this would require it to operate with considerable excess capacity at most time. What provision to make for peak demand depends upon a balancing of the revenue lost by failing to meet certain levels of the peak against the costs incurred from operating the capacity necessary to provide a given probability of being able to offer service to the peak customer. Government subsidy tended to distort this calculation.

<sup>13</sup> 8 CAB 175, 192 (1948).

<sup>14</sup> During 1949 the local service revenue passenger load factor was 28.2% based upon an average seating capacity of twenty years; i.e., average revenue passenger load was 5.64.

<sup>15</sup> *Trans-Texas Certificated Renewal Case*, 12 CAB 606, 627 (1951).

In the following years the local carriers and the CAB recognized the need for a DC-3 replacement. Many designs were proposed by foreign and domestic manufacturers and some were built and marketed. Yet it was not until 1965 that an actual DC-3 replacement was placed in service by a local service carrier and then only in limited numbers.<sup>16</sup> The managements of the local service carriers blamed aircraft manufacturers for being unable to produce efficient short-haul aircraft, but under the system of subsidization in effect during the 1940's and 50's, there was no incentive for a carrier to generate capital, at a substantial cost, merely to lower operating costs and, in turn, its subsidy.<sup>17</sup>

There was an incentive, however, for the local carriers to equip themselves with aircraft that would be comparable in size, speed and comfort with those of the trunklines. Accordingly their competitive position was enhanced where competition was possible. If the government stood willing to subsidize this type of equipment purchase through increased subsidy, so much the better.

The aircraft acquired to replace the DC-3's were mostly used piston aircraft of thirty-six to fifty seat capacity. It has been shown that the price of a used commercial aircraft is approximately equal to the present value of its future net earnings.<sup>18</sup> That is if two aircraft are of equal capacity and have roughly the same passenger appeal, the one with the higher operating costs will sell for less on the used aircraft market. Thus the local carriers, lacking capital funds because of their low and unstable rate of return, and having no incentive to economize on operating costs, viewed the larger piston aircraft favorably because of its low initial price.<sup>19</sup> They had the option of purchasing turboprop aircraft of approximately

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<sup>16</sup> The aircraft was the French-built Nord 262. This was a small turboprop aircraft seating up to twenty-eight passengers. Ten of them were purchased by Lake Central and used to replace its DC-3's. In 1968 Allegheny acquired Lake Central and in 1969 phased its Nord's out of service.

<sup>17</sup> That the aircraft manufacturers were not to blame was proved by their response to the demand by the unsubsidized air taxi operators for efficient, short-haul equipment. Once there was an indication that orders would be forthcoming, many designs appeared within a very short time and without the Government aid the local carriers had claimed was needed to finance prototype development.

<sup>18</sup> Sobotka & Schnabel, *Linear Programming as a Device for Predicting Market Value: The Price of Used Commercial Aircraft*, J. BUS. 10, 30 (Jan. 1961).

<sup>19</sup> See generally Peach, *Convairs for Mohawks*, FLIGHT MAG., June 1955, at 33; Editorial, *Transport Transition*, FLIGHT MAG., June 1959, at 23, 40.

the same capacity as the larger piston aircraft or of converting the larger piston aircraft to turboprop power by refitting them with turboprop engines. This would have substantially lowered operating costs, but either new or converted turboprop aircraft cost substantially more to purchase than a used piston aircraft of equivalent capacity. Therefore since operating cost savings had less utility to the carriers than capital cost savings which were of great value, most carriers replaced their DC-3's with second-hand large piston aircraft.<sup>20</sup>

The CAB realized that the method of subsidy compensation established in 1946 was unsatisfactory and induced inferior performance by the local carriers.<sup>21</sup> Yet it was not until March 1961 that a new method of subsidization, the class rate, was established by the Board. The class rate embodied the assumption that the local service carriers were essentially homogeneous and that a simple relationship could be found between the need for subsidy and a measure of carrier activity.<sup>22</sup> Accordingly a set of subsidy rates based upon this measure of activity was established. If a carrier could lower its operating costs relative to the average, it could keep the additional profits that resulted within the established limits of the class rate's profit sharing provisions.<sup>23</sup> As a result, the Board's authority to scrutinize and disallow costs was discontinued. Thus, rather than wait interminably under the class rate a carrier could have advance knowledge, within rather narrow limits, of the amount of subsidy it would receive.

The class rate eliminated many distortions to the incentives that had resulted from the previous subsidy compensation system. For the first time the class rate provided a significant incentive to reduce operating costs. Equally important was the stability intro-

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<sup>20</sup> Those few carriers that did buy turboprops used them on their longer routes where their higher speed provided enhanced passenger attracting ability. Most of these turboprop aircraft were financed by the government guaranteed loans, since the carrier were unable to raise the funds to purchase them at free market rates lying within their ability to pay.

<sup>21</sup> *Local Service Class Subsidy Rate Investigation*, 34 CAB 416, 432-33 (1961).

<sup>22</sup> Originally, revenue plane miles per station per day was the measure employed. This was later changed to weighted departures per station per day.

<sup>23</sup> If the rate of return actually earned was greater than the "fair and reasonable differentiated rate of return" but less than 15%, the carrier was to refund 50% of the excess. If it was greater than 15%, 75% of the excess was to be refunded.

duced into subsidy payments. This stability, in addition to the higher allowed rates of return established by the Board at the same time,<sup>24</sup> substantially improved the financial position of the local service carriers and thereby lowered the cost of obtaining capital funds.<sup>25</sup>

The impact on aircraft selection was desirable. Since there was a positive incentive to reduce operating costs and could more easily raise funds, the local carriers began to show a renewed interest in turboprop aircraft. At the end of 1960 the local carriers operated only thirty-five turboprop aircraft compared with fifty-nine large piston aircraft.<sup>26</sup> In November 1963, Frontier placed the first firm order for Convair 580 turboprop conversions. By the end of 1968 all Convairs had been converted to turboprop power and the locals were operating 244 turboprop aircraft.<sup>27</sup> Even if the

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<sup>24</sup> In 1960, the Board decided that the "fair and reasonable rate of return for the local carriers was to be 5.5% on debt and 21.35% on equity applied to the carriers' actual capital structure. This rate was not to fall below 9% on total investment nor to exceed 12.75% on total investment. Previously the rate of return allowed had been 7% while on an "open rate" and an individually negotiated rate, usually around 8%, while on a "final" or "closed" rate. In later years, the particular rates of return allowed on the various elements of a carrier's capital instructure were altered to reflect what were perceived as changed in the carriers cost of capital.

<sup>25</sup> See R.H. Vaughn, *supra* note 10. Between 1961 and 1966 the local service carriers averaged a 16.97% after tax rate of return on stockholder equity and a 9.94% rate of return on total investment (after tax but before interest payments).

Both figures reflect adjustment to include the effect of income tax credits. In addition both of these rates were much more stable during this period than they had been in previous periods.

<sup>26</sup> We have estimated that the increased operating costs of a conventional Convair over a Convair with Allison turboprop engines amounted to approximately \$175,000 per year. The cost of conversion was approximately \$500,000 to \$600,000 per aircraft. This implies a period of 2.9 to 3.7 years (excluding interest and rate of return on the additional capital employed). At one point, the local carriers were operating 200 large piston aircraft.

Four of the thirty-five turboprops in the local service fleet in 1960 were Napier Eland Convair conversions owned by Allegheny. This conversion proved unsuccessful when problems with the engine prevented time between overhaul from exceeding 600 hours. *Allison Turboprops to be Installed on Four Frontier Convairs*, AVIATION WEEK Nov. 25, 1963, at 39.

<sup>27</sup> The two year delay between the establishment of the class rate and the first orders for conversion can be explained by three factors. First, it took some time before the investment communities realized the impact of the class rate upon the local service rate of return. Second, during the 1961-63 period a quirk in class rate I made it profitable for carriers to acquire large aircraft. For a given amount of money a carrier could acquire more large piston aircraft than turboprops. This quirk was removed when class rate II was established in 1963. Between 1960 and the end of 1963 more than 120 large piston aircraft were acquired. Finally,

class rate method of subsidy payment, combined with a higher allowable rate of return, tended to correct the distorted value placed by the local carriers on operating costs relative to capital costs,<sup>28</sup> it nevertheless failed to create any significant incentive to acquire smaller aircraft. The class rate I, in effect from 1961 to 1963, actually rewarded the operator of excessively large aircraft with high subsidy.<sup>29</sup> In 1963 the subsidy rates were adjusted to neutralize the choice between the DC-3 and larger aircraft.<sup>30</sup> When it established class rate III in 1964, the Board refused to accept Lake Central's request to establish a subsidy rate that would have made Nord 262 operations more attractive.<sup>31</sup> Only in 1967, when the class rate IV was adopted, did the Board begin providing any financial incentive for the local service carriers to use smaller aircraft.<sup>32</sup> Even this attempt was partially offset by a provision that when aircraft of different capacities were used to serve a subsidy-eligible route, subsidy payments were to be computed on the basis of the capacity of the largest aircraft employed.

The continuing need of the local carriers for a DC-3 replacement was highlighted by a study performed in 1964 for the FAA by the Systems Analysis and Research Corporation.<sup>33</sup> SARC projected local service traffic growth through 1975 and simulated operations at these traffic levels to determine the aircraft size which

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during the late 1950's and early 1960's the Board was very busy handing out new routes to local carriers. Acquisition of the aircraft necessary to operate these routes for which Central Airlines was applying, for example, would cost 5.1 million dollars if DC-3's and F-27's were acquired. At the time Central's total assets were \$2.4 million, of which \$85,000 represented account receivable—primarily subsidy due but not yet collected. *See* Central Loses Bid for Recess in Southwestern Case, *Av. DAILY*, Nov. 4, 1960, at 20. Once the improved financial condition of the locals became apparent, the distortion in class rate I was removed and the route awards were digested by the CAB. Turboprop acquisition and conversion then rapidly proceeded.

<sup>28</sup> Arguably, the correction tended to be too great and a bias of the opposite sort was introduced. *See* Averch & Johnson, *Behavior of the Firm under Regulatory Constraint*, *Av. ECON. REV.*, Dec. 1962, at 1052.

<sup>29</sup> *Local Service Class Subsidy Rate*, 39 CAB 65 (1963).

<sup>30</sup> *Id.* at 77.

<sup>31</sup> *Investigation of the Local-Service Class Subsidy Rate*, 41 CAB 138, 145 (1964).

<sup>32</sup> *Cf. Board Shifts Policy on Subsidies*, *AVIATION WEEK*, April 10, 1967, at 36, 37.

<sup>33</sup> *See generally* SYSTEMS ANALYSIS AND RESEARCH CORPORATION, *ECONOMIC ANALYSIS OF THE SHORT HAUL TRANSPORT* (1964).

maximized profits or minimized losses on the low density routes. The report concluded that even in 1975 more use should be made of smaller (less than 40-seat) aircraft than was then (1963) being made of the DC-3. Moreover, there would be a need for between 300 and 500 twenty-seat aircraft depending upon airline speed, utilization and load factor targets.<sup>34</sup>

Despite the findings of the SARC report, the phaseout of the DC-3 continued. In 1960, DC-3's flew two-thirds of all local service revenue miles. By 1963, DC-3 aircraft miles had dropped to thirty-six per cent of the total. And in 1969 the aircraft was completely eliminated from the local service fleets. In the same year the Nord 262, the only DC-3 replacement ever purchased by the local service carriers, was also retired. Moreover during 1969, sixty-one per cent of the local service seat-miles were flown by jets. Regarding the growth of local service carrier jet operations, it was remarked:

For years the [local service] industry sought a DC-3 replacement. All sorts of proposals were made and analyzed. Arguments flew hot and heavy as to the proper specifications for the airplane to fit the peculiar short-haul routes of the locals: but no universal replacement airplane was ever developed. That is, until the DC-9 series came along.<sup>35</sup>

The smallest DC-9 has a seating capacity of sixty-nine passengers, while the DC-9-30, the jet aircraft in largest use by the local carriers, can seat one hundred passengers.

In 1954, when the local service fleet consisted almost entirely of DC-3's and averaged 22.4 seats per aircraft, there were 197 cities served that generated fewer than 7,300 passengers per year (20 per day). In 1969, with forty-five per cent of the local service aircraft miles being flown by jets and the average number of seats per aircraft at 64.9, almost three times the 1954 level, there were still 165 cities served by the local carriers that generated fewer than 7,300 passengers per year. Consequently the consistent failure of Board subsidy policy to create meaningful economic incentives for local carriers to use smaller aircraft, and the Board's continued

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<sup>34</sup> The Beech 99, a 15-seat aircraft purchased in large numbers by the air taxis is said to have been designed according to the specifications developed by the FAA on the basis of the SARC Study.

<sup>35</sup> FLIGHT MAG., June 1969, at 21.

support of the use of larger aircraft, constitute perhaps the most important reasons for the failure of the "local service experiment."

#### IV. THE EFFECTS OF ROUTE POLICIES

The evolution of the CAB's route policy further explains the growth pattern of the local carriers. Frequently, when the local carriers were established, their routes would originate or terminate at points already served by trunk lines, although the locals would also be serving intermediate points. For example, in the West Coast Case, feeder service was established between Los Angeles and San Francisco. Trunkline service already existed between these two terminals and at two intermediate points—Monterey and Santa Barbara. The Board authorized Southwest Airways to serve these cities and six other intermediate stops—Oxnard/Ventura, Santa Maria, San Luis Obispo, Coalinga, Santa Cruz and San Jose.

The Board recognized that the feeder carriers would be tempted to neglect the new stations, which were not expected to generate traffic, and concentrate on winning a share of the trunkline traffic between the larger cities.<sup>36</sup> To prevent this and to insure that the new carriers concentrated upon serving the markets they had been created to serve, the CAB required that feeder carriers stop at all intermediate points on their routes on every flight regardless of the traffic generated by the intermediate points. The examiners, although recognizing the need to restrict feeder operations if the smaller communities were to be served, nevertheless argued against the Board's restriction because it "would place a serious handicap on the operator in cultivating the business of the traveler who wants to get from a small town to a large town with a minimum of delay."<sup>37</sup> The examiners had proposed several alternative restrictions preserving feeder flexibility yet preventing the feeders from competing with the trunks and abandoning their smaller stations, but the Board ignored their recommendations.

Subsequently, the Board recognized that its restriction prevented

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<sup>36</sup> The Los Angeles-San Francisco market, for example, was the nation's second largest in terms of passengers and sixth largest in terms of passengers as of September 1947. See F. Gill and G. Bates, AIRLINE COMPETITION 349 (1949 Division of Research, Graduate School of Business Administration, Harvard University).

<sup>37</sup> *Investigation of Local Feeder and Pick-up Air Service*, 6 CAB 1, 55 (1944).

the feeder carriers from achieving full traffic potential; but when it chose to make modifications, it acted in a way to encourage direct trunk-feeder competition rather than to encourage adequate small town service. In 1946 the CAB granted Pioneer the right to offer unrestricted shuttle service between any two points named consecutively in its certificate. At that time, Pioneer's route included several segments in which it could directly compete with the trunklines. These points, however, were listed as intermediate rather than terminal points in Pioneer's certificate. This meant that any flight which Pioneer might operate between the competitive points had to originate at a designated terminal point and continue to another point. However, the Board's action freed Pioneer to offer an unlimited number of flights on the competitive segments.

The Board's schizophrenic attitude toward direct trunkline-local carrier competition is best shown in the series of cases reviewing the local carriers initial three year operating certificates. The first case to be settled involved Florida Airways which flew eight-passenger Beech-18 aircraft and offered two round trips per day to nine cities in Florida. Florida provided exclusive service to six of these cities, and in March 1948, one year after Florida began operations, the nine cities generated 577 arriving or departing passengers, which was sixty-three per cent of Florida's monthly traffic.<sup>38</sup> During this month Florida received 28,871 dollars in mail pay or 50.05 dollars for every passenger hauled either to or from an exclusively-served city. During 1948 Florida received more than seven dollars in mail pay for every dollar collected from a passenger or shipper of air freight.<sup>39</sup> The Board decided on March 9, 1949, not to renew Florida's certificate, because of this high ratio of mail pay to commercial revenues and stating:

[T]he conclusion is inescapable that route No. 75 [Florida's route] is an uneconomical route, that no substantial increase in nonmail revenues can be expected in the reasonably foreseeable future and that further expenditure of public funds will not avail

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<sup>38</sup> See generally CIVIL AERONAUTICS BOARD, AIRLINE TRAFFIC SURVEY (March 1948).

<sup>39</sup> Subsidy was not reported separately from mail pay on carriers' accounts until 1954. Most revenue reported as "mail pay" during the pre-1954 period was subsidy.



to develop it into a route that can be operated at a reasonable cost to the Government commensurate with the service rendered.<sup>40</sup>

The polar extreme is illustrated by a recertification case involving Pioneer Airlines. In 1948 mail pay had constituted more than eighty-five per cent of Florida's total revenues. During 1949, the year prior to the Pioneer recertification decision, almost half of Pioneer's revenue came from non-mail sources. The Board renewed Pioneer's certificate for four additional years stating:

. . . the record indicates a substantial and increasing acceptance of Pioneer's service. Moreover Pioneer's ratio of mail pay to commercial revenues is the most favorable of any existing local carrier. While the total cost to the Government for Pioneer's service remains considerable, the record conclusively shows that this carrier is making encouraging progress toward commercial self-sufficiency.<sup>41</sup>

Thus the Board clearly established in these two cases that a carrier's ratio of mail pay to commercial revenues would form the primary basis of the decision for recertification. This criterion continued to be applied in subsequent renewal proceedings.

A further examination of Pioneer's operating results demonstrates that such a standard was completely inappropriate for judging whether to continue the "local service experiment." For example, despite the Board restrictions limiting local service, trunk-line competition, Pioneer was able to compete with the trunklines. In the Pioneer Renewal Case the Board noted this fact. The March 1948 statistics revealed that Pioneer carried 6,251 passengers during the month, almost seven times as many as Florida. Yet only 1,012 of these passengers, or sixteen per cent, traveled either to or from an exclusively-served city. And during March 1948, Pioneer received 100,255 dollars in mail pay, or 99.07 dollars for every passenger generated by a point served exclusively by Pioneer, *twice* the level required by Florida during the same month.<sup>42</sup> As argued by one Board member dissenting in a later case,<sup>43</sup> the cri-

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<sup>40</sup> *Florida Airways, Inc., Certificate Extension*, 10 CAB 93, 97 (1949).

<sup>41</sup> *Pioneer Certificate Reviewal Case*, 12 CAB 1, 5 (1950).

<sup>42</sup> During March 1949 Pioneer's mail pay per passenger travelling to or from an exclusively served community was \$113.61. See generally CIVIL AERONAUTICS BOARD, AIR TRAFFIC SURVEY (March 1948).

<sup>43</sup> *Trans-Texas Certified Reviewal Case*, 12 CAB 606, 637 (1951) (*dissenting opinion*).

terion of the cost to the government of providing service to persons who otherwise would be denied air service should have been controlling rather than the ratio of mail pay to nonmail pay in deciding whether recertification was in the public interest. Judged on these grounds, Pioneer, basically a trunkline carrier serving a few small cities, was less deserving of recertification than was Florida, a carrier attempting, within the Board's severe restrictions, to offer the type of service envisioned by the Board when it decided to initiate the "local service experiment" in 1944. Perhaps neither carrier deserved recertification and the better course for the Board was to have terminated the "local service experiment." This course was not followed, however; and no feeder carrier operating DC-3's and offering service comparable to the trunklines was denied recertification. No carrier not operating DC-3's was recertified.

The Board began relaxing its restrictions on direct local service-trunkline competition as early as 1946 and continued loosening the restrictions through the 1960's. Prior to 1966, however, except in rare cases, the CAB prohibited a local carrier from offering non-stop service over a segment also served by a trunk carrier, but in that year this last prohibition was abandoned.

A second method of "route strengthening" undertaken by the Board was the transfer of points from trunklines to local carriers and the suspension of trunks where joint service was offered. Initially the trunks opposed these suspensions, primarily in the courts, challenging the Board's legal right to make them.<sup>44</sup> Over time however, the advantages of abandoning smaller cities appeared more attractive to the trunks. The Board was even accused of soliciting a list of points the trunks would like to drop.<sup>45</sup> Between 1949 and 1964, seventy-eight cities were transferred from trunks to locals, trunks were suspended at fifty-one points where joint service had been offered and at twenty-four additional stations trunks were suspended and replaced by locals though joint trunk-local service remained.

The one form of "route strengthening" on which the Board procrastinated was the elimination of marginal stations. During the late 1950's and early 1960's in a series of new area cases many

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<sup>44</sup> See, e.g., *Western Airlines, Inc. v. CAB*, 196 F.2d 933 (9th Cir. 1952); *United Airlines v. CAB*, 198 F.2d 100 (7th Cir. 1952).

<sup>45</sup> Editorial, *AVIATION DAILY*, Dec. 14, 1960, at 262.

new marginal points were added, contributing greatly to the subsidy increase occurring during that period. For example, in the first of these cases,<sup>46</sup> sixteen points were added to Frontier's routes. By 1965, ten of these sixteen points were dropped for failing to generate an average of five passengers per day, the minimum standard for continuing service. In 1965 the remaining six stations generated a total of 28,024 passengers for Frontier, of which 13,991, almost one-half, came from Rapid City, South Dakota. The other five stations generated an average of 7.8 passengers per day, barely above the minimum standard. Thus of the sixteen points added, only one was a success. Although the minimum standard was established in this case, the Board applied it slowly and the standard itself was unrealistically low. Even as late as 1969, thirty-four stations receiving a full year's service failed to meet this minimum. The reason for this slow response was probably because both the Board and the local carriers realized the necessity of retaining smaller cities if they were to keep the Congressional support on which subsidies depended. The local carriers therefore continued to serve the marginal cities although they reduced service frequencies and used aircraft that were larger and more costly to operate than would have been used if their interest had been to efficiently serve these cities. The carriers received subsidies to cover their operating costs and used the high, stable rates of return received after 1961 to establish the credit position that enabled them, by the end of 1969, to purchase six Boeing 727's, seventeen Boeing 737's, ninety-five DC-9's and twenty BAC 111's. These are hardly suitable aircraft to provide better service to the smaller communities they served.

The Board's route strengthening policy had a substantial impact on the routes of the local service carriers. For example, between 1954 and 1965 the proportion of local service carrier traffic generated on competitive routes arose from nineteen to thirty-three per cent even though the latter year was the year *before* the Board began to promote direct trunkline-local service carrier competition.<sup>47</sup> In 1966 the Board did away with its long-standing general

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<sup>46</sup> *Seven States Area Investigation*, 28 CAB 680 (1958).

<sup>47</sup> A route is defined as "competitive" if no single air carrier more than 90% of the traffic on that route. *United Research, Inc., Federal Regulation of the Do-*

policy of prohibiting nonstop flights by local service carriers in markets also served by trunklines. If the Board allowed the locals to serve the same routes as served by the trunklines, it was hoped that they would earn sufficient profits to "internalize" the local service subsidy.<sup>48</sup> Although thus far unsuccessful, this policy has substantially increased the importance of competitive routes to the local carriers.<sup>49</sup>

The transfer of stations from trunklines to the locals had a particularly important impact on the strength of the routes of the local service carrier. Although these stations made up only one-third of the exclusively served stations in 1964, they provided nearly one-half of the passenger originations at the exclusively served cities. When these stations are included, average passengers per station at the exclusively served cities grew 383 per cent over the 1949-64 period.<sup>50</sup> Average passengers per station however, at the stations never served by trunklines grew by only 269 per cent during the same period.

In order to concentrate energy and equipment on providing service to the jointly served cities, the locals have reduced the level of service they offer to smaller communities, most of which are exclusively served stations. Moreover, this reduction in service has been aided by the CAB policy of reducing required intermediate stops and also by the Board's reduction since 1961 of the number of daily flights it was prepared to subsidize.<sup>51</sup>

The local carriers refuse to admit any decline in interest for service to their smaller points. They have always stressed their

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*mestic Air Transport Industry* (1959), CIVIL AERONAUTICS BOARD, VI-5 COMPETITION AMONG DOMESTIC AIR CARRIERS, Tables B-19, 6 (1965).

<sup>48</sup> The "route strengthening" policy prior to 1966 also had as its goal subsidy internationalization, but the 1966 change in Board policy made this goal explicit.

<sup>49</sup> Watkins estimates that the locals as a group lost approximately 20 million dollars on their new competitive services in 1969, though results may improve with time. He states that today about 70% of Allegheny's revenues come from its competitive routes and that "they represent the fastest growing part of its system." The twenty-eight city pairs, over which Mohawk competes with American Airlines, produce 65% of Mohawk's revenues. Watkins, *Locals Expand with Mixed Results*, AVIATION WEEK, July 6, 1970, at 25. See also Watkins, *Locals Trunk Vie for Short-Haul Traffic*, AVIATION WEEK, July 13, 1970, at 33-37.

<sup>50</sup> During the same period average passengers per station at the jointly served stations grew 770%. See *1949 Air Traffic Survey*, 1965 FLIGHT MAG., June 1965.

<sup>51</sup> CIVIL AERONAUTICS BOARD, REPORT TO THE PRESIDENT ON AIRLINES SUBSIDY REDUCTION PROGRAM PURSUANT TO TRANSPORTATION MESSAGE OF 1962, at 4, 14-20 (1963).

commitment to serve the smaller communities. As recently as April 1969, for example, the local airlines declared:

In keeping with their primary mission of providing the best and most efficient service to the smaller communities, the local airlines have constantly improved and expanded their service to those communities. Analysis of the airports served reveals that the local service carriers continue to give the smaller cities the highest priority.<sup>53</sup>

Analysis of available data in Table 1 reveals a different story. Local service, measured by the average number of departures per station per day, has been stagnant in cities under 500,000, while significantly increasing in the larger cities. Furthermore, this data conceals much of the activity at those exclusively-served stations.<sup>53</sup>

TABLE 1

NUMBER OF AIRPORTS SERVED BY LOCAL SERVICE AIR CARRIERS AND FLIGHT DEPARTURES PER STATION PER DAY, BY POPULATION OF CITIES SERVED, 1958 AND 1968.

Population Grouping	Number of Airports Served		Total Annual Departures		Departures per Station per day		
	1958	1968	1958	1968	1958	1968	Increase
0-100,000	224	233	312,000	428,000	3.8	5.0	1.2
100,000-500,000	118	150	326,000	525,000	7.6	9.6	2.0
500,000-1,000,000	28	33	79,000	192,000	7.7	15.9	8.2
over 1,000,000	31	44	144,000	456,000	12.7	28.4	15.7
All Airports	401	460	861,000	1,601,000	5.9	9.5	3.6

Source: Systems Analysis and Research Corporation, Public Benefits Provided by the Local Airline Industry at 10 (1969).

Note: Data are mislabeled in original source.

Table 2, a tabulation of city population by passenger originations for all 287 cities receiving service throughout 1969, shows that only fifteen of these cities were above 100,000 in population.<sup>54</sup>

<sup>53</sup> SYSTEMS ANALYSIS AND RESEARCH CORPORATION, PUBLIC BENEFITS PROVIDED BY THE LOCAL AIRLINE INDUSTRY 10 (1969).

<sup>53</sup> Some of these cities are served by uncertified air taxis, however.

<sup>54</sup> The populations are "from the 1960 Census and latest available estimates." In those cases in which an airport was listed as serving more than one city, the combined populations of the designate cities was used. The largest city exclusively served by the local carriers in 1969 was Anderson/New Castle/ Muncie, Indiana, with a combined population of 159,869, See RAND McNALLY ROAD ATLAS (1970).

TABLE 2

NUMBER OF CITIES EXCLUSIVELY SERVED BY LOCAL SERVICE AIR CARRIERS, BY NUMBER OF PASSENGER ORIGINATIONS AND BY CITY POPULATION, 1969.

Population	1969 Passenger Originations Per Station						Row Total
	<7300	7300-12499	12500-24999	25000-49999	50000-99999	100,000 or >	
<6,250	17	0	3	2	0	0	22
6,250-12,499	35	9	4	0	2	0	50
12,500-24,999	35	11	23	2	1	0	72
25,000-49,999	32	15	20	15	4	0	86
50,000-99,999	7	5	9	11	10	0	42
100,000 or >	4	2	2	2	3	2	15
Column Total	130	42	61	32	20	2	287

Sources: 1970 Flight Mag. (June). Rand McNally Road Atlas, (1970).

Many smaller cities make intensive use of their air service. In 1969 thirty-three of the 144 exclusively served cities with a population of less than 25,000 originated more passengers than their listed population. Some of these points were resort areas and military posts where the listed population underestimates the traffic potential. Nevertheless, this achievement is impressive. In addition, forty-nine per cent of the cities under 25,000 generated a traffic level greater than one-half of their listed population.<sup>55</sup> This in-

<sup>55</sup> On the other hand, 42% of the fifty-seven cities having greater than a 50,000 population exclusively-served by local carriers generated a traffic level equivalent to less than 25% of their population, and 79% of these cities generated traffic equivalent to less than 10% of their population. This low level of traffic generated, relative to population at these larger cities reflects the existence of superior transportation alternatives. In most instances this superior alternative is an interstate highway. Of the eighteen cities of 50,000 or greater population generating fewer than 12,500 passengers in 1969, all but two are within approximately an hour's driving time of a large city having a superior air service. In other cases an air taxi has entered the picture evidencing that the cities are not generating their share of air traffic because of the poor service they are receiving from the local carriers. Of the eighteen cities referred to above, ten were served by air taxi or intrastate air carriers in 1969. This includes the two cases where cities lay more than one hour's driving time from a large city.

tensive use of air service at the smaller cities is not reflected in the level of flight frequency provided them. Table 3 indicates that in 1969, thirty-four per cent of the exclusively-served stations of less than 25,000 population received fewer than three departures per day and eighty-three per cent of these cities received fewer than six departures per day.

TABLE 3

NUMBER OF EXCLUSIVELY-SERVED CITIES BY LOCAL SERVICE AIR CARRIERS BY NUMBER OF FLIGHT DEPARTURES PER DAY AND BY CITY POPULATION, 1969.

City Population	Departures Per Station Per Day							Total
	Under 3.0	3.0-5.99	6.0-8.99	9.0-11.99	12.0-17.99	18.0-23.99	24 or more	
<6,250	10	10	2	0	0	0	0	22
6,250-12,499	19	29	0	1	1	0	0	50
12,500-24,999	19	33	17	2	1	0	0	72
25,000-49,999	11	42	23	5	4	0	1	86
50,000-99,999	4	13	10	4	8	2	1	42
100,000 or >	1	4	3	2	3	1	1	15
Total	64	131	55	14	17	3	3	287

Sources: 1970 Flight Mag. (June). Rand McNally Road Atlas, (1970).

To determine if the smaller, exclusively-served cities receive fewer departures than they are "entitled," the following simple model was constructed to explain airline scheduling. An airline was assumed to look at two factors in deciding how many flights to offer a point—the amount of traffic it was expected to generate and its population. The substitute for expected traffic, was the actual number of passengers originated by the station during the previous year. In addition the data for the 287 stations exclusively served by local carriers in 1969 was used. The equation was estimated in logarithmic form.

$\ln$  (flight departures per station per year, 1969)

$$= 2.742 + 0.45 \ln (\text{passenger originations per year, 1969})$$

(24.32)

$$+ 0.086 \ln (\text{population of city served})$$

(4.27)

$N=287$ ,  $R^2=0.74$ ,  $F=400.69$

The numbers in parentheses are *t*-ratios.

All variables are significant at the one per cent level, as in the equation as a whole.

While the expected traffic substitute proves to have the strongest effect, as expected, the population variable is also significant at the one per cent level. The positive sign on this variable indicates that of two cities generating equal amounts of traffic in 1969, the more populous one offered more aircraft departures. A comparison of two towns in Colorado, Durango and Pueblo, is illustrative. In 1969, both cities originated approximately 14,000 passengers for Frontier, or about forty passengers per day. Durango has a population of 10,530 and is located in a geographically isolated section of southwestern Colorado. Driving time to Denver from Durango is estimated at almost ten hours.<sup>56</sup> In other words, air travel provides the only convenient way of getting to or from Durango, and consequently, in 1969, Durango originated 1.4 airline passengers per capita.

Pueblo is a city of 102,000 population lying forty miles south of Colorado Springs and 110 miles south of Denver. Both Denver and Colorado Springs possess trunkline air service. In addition Interstate 25 connects Pueblo with both cities and the driving time to Denver is estimated at 2 1/4 hours. In 1969, Pueblo originated 0.14 passengers per capita. During that year it received 2,370 departures or 6.4 per day, while Durango received 2,064 departures, or 5.7 per day.

Other pairs of cities that roughly generated equal amounts of traffic in 1969, but where the smaller city received fewer departures, include Clovis, New Mexico (pop. 2,800) and Anderson/New Castle/Muncie, Indiana (pop. 159,869); Crescent City, California (pop. 2,958) and Trenton, New Jersey (pop. 102,000); and Crossville, Tennessee (pop. 4,668), and Tacoma, Washington (pop. 152,000). Admittedly, the population variable does not have a great impact—the larger cities generally receive at most only a few hundred departures per year more than the smaller cities, but such behavior is not what would be expected from airlines who

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<sup>56</sup> Denver is 285 air miles and 338 road miles from Durango. RAND McNALLY ROAD ATLAS (1970).



claim that "their primary mission [is] providing the best and most efficient service to the smaller communities."<sup>57</sup>

It is also that "the local carriers continue to give the smaller cities the highest priority."<sup>58</sup> For example, of those 287 cities, which received their only certificated air service from a local service carrier, 197 were also served by the local carriers in 1959, although earlier some were also served by trunklines. The remaining ninety cities have been added to the routes of the local carriers since 1959 either through the extension of air service to cities not previously receiving it or through the suspension of trunklines and their replacement by local carriers.

Table 4 shows a tabulation of change in average daily departures by city size for the 197 points served during both 1959 and 1969. Average daily departures declined at fifty-six per cent of these 197 stations. They declined in sixty-one per cent of the cities with populations below 25,000 and in eighty-one per cent of the cities with populations under 50,000.<sup>59</sup> Furthermore, at many of the stations in which departures were cut back, the scheduling of the remaining departures was altered to reduce the attractiveness of the service more than in proportion to the decline in departures. The local carriers were able to provide flights at the most attractive times to those stations in which the traffic response was likely to be greatest.

#### V. THE COST TO THE GOVERNMENT OF PROVIDING LOCAL AIR SERVICE

The local service carriers cite subsidy per passenger carried as the cost to the government of supporting local air service.<sup>60</sup> The carriers

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<sup>57</sup> See PUBLIC BENEFITS PROVIDED BY THE LOCAL AIRLINE INDUSTRY, *supra* note 52, at 10.

<sup>58</sup> *Id.*

<sup>59</sup> Average departures per station did slightly increase over the 1959-69 period at these 197 stations. The average increase was fifty-four departures per year, about 0.15 per day. This means that in 1969 this group of stations together received about 10,500 more departures than they did in 1959. Between 1959 and 1969 total local service departures increased by 604,000 from 986,000 to 1,594,000. The bulk of this increase went to stations jointly served with trunklines. At only five of the eighty-seven cities of less than 25,000 population did departures rise by more than 3.0 per day. Departures increased by more than three per day at only eleven of the 149 cities of under 50,000 population.

<sup>60</sup> The local carriers prefer to use the term "public service payments" rather than "subsidy." See note 54 *supra*, at 14.

TABLE 4

CITIES EXCLUSIVELY SERVED BY LOCAL SERVICE AIR CARRIERS  
IN 1969 AND ALSO IN 1959, CLASSIFIED BY CHANGE IN AVERAGE  
NUMBER OF DEPARTURES PER DAY AND BY CITY POPULATION.

Population	<i>Change in Average Number of Departures per Day 1959-69</i>								
	<i>Decrease</i>			<i>Increase</i>				<i>+12.00- Row more Total</i>	
	<i>greater than -6.0</i>	<i>-6.0 to -3.01</i>	<i>-3.0 to 0</i>	<i>0.01 to +2.99</i>	<i>+3.0 to +5.99</i>	<i>+6.0 to +8.99</i>	<i>+9.0 to +11.99</i>		
< 6,250	0	0	9	1	0	0	0	0	10
6,250-12,499	0	0	19	11	1	0	0	0	31
12,500-24,999	2	2	21	16	1	1	1	0	44
25,000-49,999	1	8	27	20	3	1	1	1	62
50,000-99,999	2	6	10	7	2	5	3	1	36
100,000 or greater	1	0	2	7	1	1	0	0	12
Column Total	6	16	88	62	8	8	5	2	195

Sources: 1970 Flight Mag. (June), 1960 Flight Mag. (June). Rand McNally Road Atlas, (1970).

proudly point to the decrease in this figure from 10.27 dollars in 1954 to 1.54 dollars in 1969. However, this decline primarily reflects traffic growth at the cities jointly served by trunklines and local service carriers, cities that would not lose air service even if local service subsidy were to be discontinued. A more revealing cost would be measured by passengers at points which depend solely upon local carriers for their certificated air service.

Table 5 represents an attempt to allocate the thirty-six million dollars local service subsidy in 1969, an amount which several carriers claimed was too low, to those stations that might have been without service had it been discontinued and who, were the true beneficiaries of the subsidy. The column labeled "total trips" was constructed by assuming that all trips out of an exclusively-served city were round trips and that no trips occurred between exclusively-served cities. This assumption clearly is violated, and to the extent it is, total trips are overestimated, leading to an underestimate of the subsidy cost per trip.<sup>61</sup> As shown by the Table

<sup>61</sup> This assumption becomes more valid at points generating less traffic. In 1949 less than 10% of the total trips for single carriers were between an individual carrier's exclusively served stations. An undetermined percentage of trips also occurred between exclusively served points of different local service carriers. An estimate of this bias as unavailable for more recent traffic.

5, only 4.8 of the 23.4 million passengers carried by the local carriers were generated at the 287 exclusively-served stations. Based upon these assumptions, the subsidy per trip in 1968 was 3.79 dollars for each trip to or from an exclusively-served city. Of course, not all exclusively-served cities require subsidization and would be dropped if subsidy ceased. Cities generating over 25,000 passengers per year certainly would continue to be served. The fifty-four exclusively-served cities in this class generated almost sixty per cent of the passengers generated at all exclusively-served stations. The rest of Table 5 reflects subsidy per trip on the assumption that cities generating less than the amount of traffic shown in each case would be dropped if subsidy were eliminated. For example, if all cities generating more than 7,300 passengers per year (twenty per day) would be retained in the absence of subsidy, then the subsidy required per trip in 1969 to provide air service for those which otherwise would be without air service was 39.98 dollars. If the cutoff point were 10,000 passengers per year, subsidy per trip amounted to 26.07 dollars.

TABLE 5  
LOCAL SERVICE AIR CARRIER TRAFFIC AT EXCLUSIVELY SERVED  
CITIES GROUPED BY NUMBER OF ORIGINATING PASSENGERS AND  
SUBSIDY PER TRIP, 1969.

<i>Class of Station</i>	<i>Number</i>	<i>Total Originations</i>	<i>Total Trips</i>	<i>Subsidy per trip<sup>b</sup></i>
Exclusively served stations	287	4.75 million	9.50 million	\$3.79
Exclusively served stations originating fewer than 25,000 passengers per year	233	1.92 million	3.84 million	\$9.37
Exclusively served stations originating fewer than 15,000 passengers per year	189	1.07 million	2.14 million	\$16.81
Exclusively served stations originating fewer than 10,000 passengers per year	158	0.69 million	1.38 million	\$26.07
Exclusively served stations originating fewer than 7,300 passengers per year	130	0.44 million	0.88 million	\$40.89

Source: 1970 Flight Mag. (June).

Total subsidy paid in 1969 was \$35,981,100.

Table 6, using the same set of assumptions, shows similar information for 1954, fifteen years earlier. Both fares and costs have increased since 1954, however, so the definition of a "marginal"

station may have changed. It was determined in 1959, that the minimum avoidable cost of serving an on-line intermediate station with a frequency of two round trips per day was 65,000 dollars if a DC-3 was used and 115,000 dollars if a Convair 340/440 was used.<sup>62</sup> Assuming that all service to marginal airports was provided

TABLE 6  
LOCAL SERVICE AIR CARRIER AT EXCLUSIVELY SERVED CITIES  
GROUPED BY NUMBER OF ORIGINATING PASSENGERS AND SUBSIDY  
PER TRIP, 1954.

<i>Class of Station</i>	<i>Number</i>	<i>Total Originations</i>	<i>Total Trips</i>	<i>Subsidy* per trip</i>
Total	216	0.63 million	1.27 million	\$18.70
Exclusively served stations originating fewer than 25,000 passengers per year	215	0.61 million	1.22 million	\$19.50
Exclusively served stations originating fewer than 15,000 passengers per year	212	0.54 million	1.09 million	\$21.80
Exclusively served stations originating fewer than 10,000 passengers per year	204	0.45 million	0.89 million	\$26.70
Exclusively served stations generating fewer than 7,300 passengers per year	197	0.39 million	0.77 million	\$30.96
Exclusively served stations generating fewer than 5,000 passengers per year	181	0.29 million	0.58 million	\$41.00

\* Subsidy earned in 1954 (after adjustments) amounted to \$23,807,000.

Sources: 1955 Flight Mag. (June). Civil Aeronautics Board, Handbook of Airline Statistics, 1965.

using DC-3's and further assuming that the average passenger at such an airport paid the average local service fare of 13.25 dollars, then the station would need to generate at least 5,000 passengers per year to contribute to the profit of a local carrier.<sup>63</sup>

Recent figures indicate that a station would need to generate between 7,700 passengers per year to cover the minimum avoidable costs of providing it with two round trips per day using an F-27.

<sup>62</sup> UNITED RESEARCH, INC., FEDERAL REGULATION ON THE DOMESTIC AIR TRANSPORT INDUSTRY 56-59, tables B-25 through B-28 (1959).

<sup>63</sup> The same study estimated that if subsidy had been ended in 1958, approximately half of the 530 stations then receiving scheduled air service would have lost that service. During 1958 the 265th ranking city, in terms of passenger originations, was Columbus, Mississippi with 6915 originations. *Id.* at 111.

If a Convair 580 was used, the station would have been required to generate approximately 9,000 passengers. If these figures are accepted and Table 5 is compared with Table 6, the resulting conclusion is that the cost to the government of providing air service to those points that otherwise would be without air service has not declined, and perhaps even increased, over the last fourteen years.<sup>64</sup>

One reason why subsidy costs were so high in 1968 was the stagnation of traffic at many of the exclusively-served points by local service carriers. Between 1959 and 1969, while total local service passenger originations were rising from 5.2 million to 24.5 million, originations declined and stayed constant at seventeen per cent at the 197 cities exclusively served by the local service carrier in both 1969 and 1959. But unquestionably, the major reason for the high subsidy requirements was the failure of the local service carriers to use properly suited aircraft to provide service at their marginal stations.

Table 7 shows an estimate of the total operating costs (including an allowance to cover rate of return on investment) for three aircraft—the Convair 580, the Nord 262 and the DHC Twin Otter. The Convair is typical of the aircraft the local carriers are using to serve their low density routes now that the DC-3 has been eliminated from their fleets. The Nord is the modern turboprop DC-3 replacement used periodically by Lake Central and by its successor, Allegheny. The Twin Otter is an aircraft widely used by the air taxis. The cost levels shown for the Twin Otter are included to indicate the minimum possible costs local service carriers could achieve by operating a no-frills, efficient, short-haul air service.

Table 7 shows that subsidy need was increased by sixty cents per mile for every mile operated using a Convair 580 where an aircraft

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<sup>64</sup> A recent study commissioned by the local service airlines themselves employed a somewhat different method of distributing subsidy. Any point failing to generate revenues sufficient to cover the costs allocated to that station was assigned a share of the subsidy. Thus \$245,000 of Ozark Air Lines' calendar year 1968 subsidy of \$3.5 million was assigned to Miline/Davenport/Rock Island, a station originating over 70,000 passengers for Ozark during that year and served also by United. Over \$230,000 of the subsidy was attributed to Peoria, Illinois, a city served exclusively by Ozark that originated 125,000 passengers in 1969 and received nineteen departures per day. A total of \$1.9 million of Ozark's 1968 subsidy was attributed to eleven cities each of which originated more than 25,000 passengers in 1968. See note 54 *supra*, at 12, 13, 64.

the size of a Nord could have handled the traffic and by 1.26 dollars per mile over what would have been required to provide an efficiently-run, short-haul air service using Twin Otters.

TABLE 7

OPERATING COSTS AT 90-MILE AVERAGE STAGE LENGTH, FOR  
CONVAIR 580, NORD 262, AND DE HAVILLAND TWIN OTTER.

	<i>Convair 580*</i>	<i>Nord 262</i>	<i>De Havilland Twin Otter</i>
Maximum seating capacity	53	28	20
Direct operating costs (\$ per mile)	\$1.27	\$0.99	\$0.60
Indirect operating costs	0.95	0.74	0.45
Return on Investment	0.33	0.22	0.24
	<u>\$2.55</u>	<u>\$1.95</u>	<u>\$1.25</u>

\* The Convair 580 direct operating costs are those actually experienced by operators of this aircraft in 1958 according to the CAB "Aircraft Operating Cost and Performance Report," August 1969, issue. These costs were adjusted for a 90 mile average stage length using information contained in Senate Aviation Subcommittee, Review of the Local Air Carrier Industry (89th Cong., 2d Sess., Feb. 28, March 1, 3, and 4, 1966), pp. 136 and 159. Indirect costs were assumed to be 75% of direct costs following SARC, "Economic Analysis of the Short Haul Transport." Total investment required per aircraft for the Convair and Nord were taken from Civil Aeronautics Board, "Local Service Carriers' Unit Costs, year ended March 31, 1969," Attachment C, part 3, p. 1. Total equipped cost of the Twin Otter was assumed to be the price being quoted by the manufacturer in mid-1968 for the Twin Otter, Series 300. This figure was multiplied by 1.5 in order to arrive at average investment per aircraft. This procedure was in keeping with the one followed in the CAB document just referred to. It was assumed that a 10% rate of return on investment would be allowed. Rate of return per mile was computed by dividing this annual return figure by the number of miles each aircraft was assumed to fly in a year. For the Convair this was 500,000 miles, for the Nord 400,000 miles, and for the Twin Otter, 270,000 miles. These figures were all within the range of actual figures achieved by operators of these aircraft taking the 90 mile average stage length into account.

To estimate the total increase in 1969 subsidy requirements attributable to the use of larger aircraft, the number of aircraft miles that could have been flown using smaller aircraft has to be estimated. The optimal size of smaller aircraft for the local carriers has been determined to be of a twenty seat capacity and also that in 1975 these aircraft should be flown seventy-one million miles by the local carriers.

The SARC report<sup>65</sup> assumed that all low-density routes flown during 1963 would continue to be flown during 1975. Since 1963, however, some of these routes have been abandoned. Therefore, a conservative assumption is that in 1969 the local service carriers should have flown only forty-four million aircraft miles using equipment of the size of the Nord 262 or Twin Otter, the same number of aircraft miles that they actually flew with DC-3's during 1963. In 1969 the local service carriers actually flew about three million aircraft miles using such equipment—primarily the Nord 262. The difference leaves forty-one million aircraft miles that were flown in 1969 using aircraft that were too large. This implies that the subsidy need (including the rate of return element) was increased from twenty-five million dollars (assuming Nord's would have been used rather than Convair 580s) to fifty-two million dollars (assuming Twin Otters could have been used and air taxi cost levels achieved). In contrast, the actual subsidy paid in 1969 was thirty-six million dollars.

#### VI. CONCLUSION: THE FUTURE OF THE LOCAL SERVICE CARRIERS

Several alternatives are available in deciding the future of government policy towards local air service. First, the local service subsidy could be phased out over a short period; *i.e.*, one to five years, and the local service carriers could be allowed to abandon any routes they wished. They would then be treated as trunklines for regulatory purposes. The extent of abandonment would depend upon the level of unsubsidized service the local carriers chose to offer. If cities generating more than 7,300 passengers per year can cover the marginal cost of their service, then only 130 cities who depend solely upon local service carriers for their certificated air service (based upon 1969 data) would be dropped. If 15,000 passengers per year were required, then 158 cities would lose service. If stations not generating at least 25,000 passengers per year were dropped, 233 cities would lose service. This figure of 25,000 passengers per year (or about seventy per day), appears to be the level of required traffic to support the type of small jet service recently acquired in large numbers by the local carriers. Then, all

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<sup>65</sup> See SYSTEMS ANALYSIS AND RESEARCH CORPORATION, ECONOMIC ANALYSIS OF THE SHORT HAUL TRANSPORT (1964).

but seven of the 144 exclusively-served cities of under 25,000 population would lose their certificated air service. Partially offsetting this loss would be the entry of air taxis that can although unsubsidized, profitably serve cities of lower traffic generating potential than can the local carriers because of air taxis' lower costs. However, the extent to which such replacement would occur is open to speculation.

A second possibility is to provide government subsidy to the extent necessary to allow the local carriers to continue to offer service of the type they presently offer using whatever aircraft they choose to employ. While the substantial losses recently incurred by the airline industry are to some extent the result of non-recurring costs associated with both newly acquired aircraft and competitive routes recently awarded to the local carriers in the Board's mistaken attempt to internalize the local service subsidy, there is no doubt that adoption of this option would require a substantial and immediate increase of the local service subsidy. Furthermore, it is almost certain that the local service subsidy would rise in the future, since even now some of the local carriers are beginning to talk about phasing out their turboprops and converting to all jet equipment.<sup>66</sup>

Third, the government could encourage local carriers to sub-contract with air taxis to assume services at smaller stations. This approach was pioneered by Allegheny, which in October 1967 turned over its services at Hagerstown, Maryland, to Henson Aviation. Under the terms of Allegheny's contract with the air taxi operator, Henson is guaranteed a break even financial result during the first two years of the contract based upon a standard cost allocation. Allegheny provides reservation and customer service at the terminal point and requires Henson to meet Allegheny's standards of customer service. The contract runs for ten years, and Allegheny guarantees to resume flights with at least the same level of service in effect prior to the contract if the agreement is terminated.

Allegheny considers its experiment to have been a success. The improved frequency of service offered by Henson has stimulated traffic and the carrier claims to be at least breaking even on its

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<sup>66</sup> See Editorial, *Frontier's Reversing the Adverse*, FLIGHT MAG., June 1970, at 45. Operating costs per mile (including rate of element) for the DC-9-10 are approximately thirty-nine per cent higher than for a Convair 580.



Hagerstown services. The alleged savings to the government in subsidy reduction at Hagerstown is 84,921 dollars per year. As of April 1970, Allegheny had transferred thirteen of its stations to air taxi operators under such agreements, and the carrier is known to be negotiating additional agreements. Ten stations had been transferred by Frontier, and eight points by other local carriers.<sup>67</sup> Such a plan of local carrier transfer to air taxis was endorsed in a recent speech by a Board member,<sup>68</sup> though he was careful to state that his remarks did not imply Board endorsement of such a general transfer policy. The Board member estimated that approximately 120 points generating fewer than fifteen passengers per day in 1969 were "suitable" for such a transfer. He proposed that local carriers receive a fee for "administration" of the contracts.

An alternative plan of obtaining the efficiencies afforded by the use of small turboprop feeder aircraft would be for the government to directly contract with air taxis to provide those feeder services where in the public interest.<sup>69</sup> Local service carriers could list cities they proposed to drop and where continuation of service appeared desirable (either economically or politically). The government could announce that it was accepting bids for the annual lump sum subsidy required to operate a specified frequency of service from designated points to the particular city. The low bidder would be awarded a long term contract to provide this service. While the large number of air taxi operators should assure that the scheme would not yield the winner exorbitant profits, the opposite result conceivably presents a problem. Air taxi operators, over optimistic about traffic and costs, might be tempted to bid too low. In some cases bidders, taking their cue from the early air mail contract bids, or from the experience of defense contractors, might purposely bid low to "buy into" the program, expecting the government to be willing to "recontract" later. In these events the government would have to be prepared to allow an over optimistic bidder to go broke. The supply of potential entrants is large enough to insure that

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<sup>67</sup> Since 1964, trunklines have turned over twenty-three points to air taxis. See AVIATION WEEK, June 1970, at 35.

<sup>68</sup> Address by John G. Adams, Association of Local Transport Airlines Regional Meeting, May 1, 1970.

<sup>69</sup> This proposal is similar to that advanced by Swaine, *A Proposal for Control of Local Service Subsidies*, 31 J. AIR L. & COM. 181 (1965).

another operator would be prepared to take his place at a slightly higher level of subsidy.

Economically, this plan has many advantages. Foremost is its maximum incentive for efficiency. Any cost savings the air taxi operator could obtain would be translated directly into increased profits. A second advantage is that the government could be unconcerned about the type of aircraft used by the contractor, as long as he met the terms of the contract concerning frequency and reliability of service. If it wanted, the operator could freely use a Boeing 747 on a fifty mile flight between a small community and a larger city. The gain or loss incurred would accrue entirely to him. Moreover, bidding for these contracts should not be limited to air taxi operators. If a trunk or local service carrier felt that it could serve the point by regular flights at lower cost than an air taxi using smaller equipment, then a bid should be allowed.

The third advantage of this scheme is that it prevents the continuation of the illusion, possible under the subcontracting scheme, that the local carriers are still serving the smaller cities for which they were created. Furthermore, since no "administration fee" is paid to the locals, a disguised subsidy would be impossible. This is not to say that the air taxi contractors under the direct contracting scheme would not use trunkline and local carrier reservation services and ground facilities, but merely that arrangements for the use of such facilities could be directly made between these carriers and the air taxi contractors with the price charged covering the cost of providing the facilities plus a reasonable profit.

The final advantage of this scheme is that it would eliminate one reason for economic regulation of the airline industry. The major cause of regulation today is the need to control entry to preserve profits on denser routes for use in subsidizing thinner routes. Under the scheme being proposed, this need would cease since losses would be directly borne by the government. The costs of providing air service to smaller communities would be apparent to all. This is a feature of all four options.

Necessarily, the direct contracting proposal crucially depends upon the government's willingness to require the contractors to adhere to the terms of the contract. As recent experience with the defense contractors as well as earlier experience with air mail con-

tracts demonstrates, the possibility of "recontracting" after a contract has been awarded encourages bidders to "buy into" programs with unrealistically low bids.<sup>70</sup> The relationship of the CAB vis-a-vis the local carriers over the last twenty-five years provides little ground for hope that the CAB could be expected to exercise the necessary firmness with winning bidders. The Board's major concern has been with the financial health of the carriers and not the cost and quality of the service provided to the communities. For this reason, the direct bidding scheme might prove to be unworkable in practice in spite of its apparent advantages. Therefore, the plan of having local carriers subcontract with air taxis would represent a "second-best" type of solution.

This scheme transfers to the contracting local carrier the responsibility for enforcing cost consciousness upon the air taxi subcontractor. Yet some degree of firmness by government is necessary if savings in subsidy are to persist. The air taxis operate low cost services today because they must cut costs to have any chance of surviving. But once assured of survival through subcontracts with local carriers, they may be expected to become less cost conscious. In this they are certain to have the support of the Air Line Pilots' Association which already has managed to thwart at least one attempt by a local service carrier to use small aircraft.<sup>71</sup> Only by adopting a method of regulation and subsidization that takes advantage of the virtually limitless number of people who want to own their own airline can the type of efficiencies envisioned by the Board in 1944 be retained. The history of regulation of the local service carriers over the last twenty-five years provides ample evidence of how easy it is to fail to accomplish this objective.

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<sup>70</sup> See R.E. CAVES, *AIR TRANSPORT AND ITS REGULATORS* 124 (1962); Editorial, *LOH Hearing May Spur Tighter Bidding Rules*, *AVIATION WEEK*, March 12, 1967, at 87.

<sup>71</sup> Cf. Pickering, *Five Regionals Using Small Twins*, *FLIGHT MAG.*, March 1970, at 42. See Editorial, *Where Others Get in Pilot's Seat*, *BUS. WEEK*, March 1, 1969, at 92.