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AIR MAIL SUBSIDY OF COMMERCIAL AVIATION

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INTRODUCTION

WITHOUT the continuing performance of the aviation services of the Federal Government, the commercial airlines of the United States could not operate for a single day.

The people of the United States through their Federal Government are very much engaged in the commercial aviation business. Not only have air mail contracts been a principal and indispensable source of revenue to private air carriers over the years since 1926, but the Federal Government has built, maintained, and operated with funds appropriated from general revenues the network of beacons, radio range stations, and other facilities which together make up the present vast system of aeronautical aids known as the Federal Airways. The Federal Government has provided directly the greater part of all funds invested in the construction of civil airports and has developed and maintained elaborate air weather forecasting services without which the present scheduled operations of our great modern air liners would not be possible. Most of the personnel required for air traffic control at our principal airports as well as the thousands of persons employed in the maintenance and operation of the Federal Airways and in the aeronautical weather services of the Weather Bureau are on the Federal payroll.

Up to the present time, no means has been devised whereby the Government can reasonably expect to recover directly any part of the amounts invested. Moreover, the current, steadily increasing costs to the Federal Government for the maintenance and operation of the Federal Airways, the Air Weather services, and similar Federal expenses incurred in the interest of commercial aviation are paid entirely from general tax revenues and no plan for recovering any part of

such expenses from the private carriers benefitted has as yet received really serious consideration in any quarter.

The principal reason for this state of affairs lies in the fact that, with the exception of a few years during the recent war, the earnings of the principal commercial air carriers have not been sufficient to support any repayments to the Government for the benefits described above. Indeed, but for the direct air mail payments to individual carriers, most, if not all of the principal carriers would have been unable to remain in business.

In spite of the fact that the commercial aviation industry in the United States is now generally regarded as "Big Business" within the accepted meaning of that term, the ability of the industry to compete profitably on equal terms with other forms of transportation has yet to be demonstrated.

Generally speaking, as will be noted more specifically in subsequent pages, the policy of Federal aid to aviation has been predicated on the assumption that once the industry has achieved a certain size and stability it will be able to sustain itself in more or less free competition with other forms of transportation. In this respect the policy is similar to that which has supported protective tariffs through the greater part of our national history.

Although it appears that the average cost per seat mile has been reduced somewhat through the use of larger aircraft, it is very doubtful whether the cost per seat mile can be brought into a truly competitive relationship with similar costs for other types of transportation.¹ It is very clear, on the other hand, that the use of larger planes has been a major factor in bringing about the present precarious situation in the industry, because the current demand for air transportation is insufficient to permit profitable utilization of the increased capacity.

Most current discussions of the earnings position of the certificated air carriers take account only of the air mail subsidy, and the discussions deal for the most part with need for higher mail pay and with the question of how much of the mail pay represents subsidy. Other forms of the subsidy to commercial aviation, which are considerably larger in gross value than the air mail subsidy, and which are steadily increasing in amount, rarely figure in these discussions. There is some prospect that the air mail subsidy may ultimately be unnecessary and that the certificated airlines as a group may become "profitable" in the current usage of that term as applied to commercial aviation. However, the prospect of their achieving an earning rate which would permit them to reimburse the Government for their use of facilities and services now provided without charge, and thereby achieving a status of true economic self-sufficiency, is quite another and much more difficult matter.

¹ PUFFER, *AIR TRANSPORTATION* (Philadelphia: The Blakiston Company, 1941), pp. 23-25.

It is worthy of note in this connection that in no other major nation has air transportation been attempted on a competitive private enterprise basis. In nearly every other country the Government has buttressed its financial support of the industry with more or less direct control over commercial aviation policies and there has been no assumption that air transportation can or should become economically self-sufficient in free competition with other transportation systems.

ATTITUDES TOWARD FEDERAL AID

The attitude of the Congress with respect to Federal aid to air transportation has undergone a considerable metamorphosis since it first passed legislation to authorize the carrying of air mail on a contract basis. The first Air Mail Act, generally known as the Kelly Act, which became law on February 2, 1925, authorized the Postmaster General to contract with private operators for the carrying of air mail, provided that contract rates should not exceed 80 per cent of the postal revenues derived from mail carried by aircraft. Congress clearly expected that the air mail service should pay for itself.

In the earliest hearings on air mail legislation, representatives of the industry agreed with Government officials that there was no economic or other justification for subsidizing the commercial aviation industry.² During the years from 1926 through 1934, when many efforts were made to establish a basis on which commercial carriers could carry mail without subsidy benefits, the principal objective was to achieve a volume of air mail which it was believed would permit profitable operations without subsidy aid.

Early in 1930 the Postmaster General is reported to have told the air mail carriers that they were not entitled to a subsidy similar to that paid to ocean shipping companies, because they were not competing with foreign carriers. Moreover, he is said to have taken the position that air mail payments should *not* be used to compensate for losses incurred from passenger traffic.³

The Air Mail Act of 1934 specifically provided that air mail payments should not exceed air mail receipts after June 30, 1938. Although the Civil Aeronautics Act of 1938 makes no provision for the elimination of the subsidy, the Civil Aeronautics Board has proceeded on the assumption that private air mail carriers will some day achieve a basis of operation which will permit discontinuance of air mail subsidy payments.

The Board of Investigation and Research, in its report of September 18, 1944 to the Congress, specifically recommended that

² U.S. Congress, House of Representatives, *Commercial Aviation—Air Mail Service*, Hearing before Committee on Post Offices and Post Roads, U.S. House of Representatives, 67th Cong., 2nd Sess., January 6, 1922 (Washington: Gov. Print. Off. 1922).

³ DAVID, *THE ECONOMICS OF AIR MAIL TRANSPORTATION* (Washington: The Brookings Institution, 1934), pp. 88-99.

"public policies should be directed toward the objective of placing domestic air transportation on a self-sustaining basis as soon as that may be practicable."⁴

The President's Air Policy Commission in its report of December 30, 1947 said:

We consider that direct Government financial aid to commercial airlines is fully justified on grounds of national security and economic welfare. We believe the air transport system of this country can, with such aid now, become self-supporting in the future.⁵

It is the purpose of this study to trace the history and current trend of Federal Aid to domestic commercial air transportation, to compute estimates of the dollar value of the several forms of subsidy in recent years, to appraise the industry's prospects for achieving economic self-sufficiency within the foreseeable future, and hence to arrive at some judgment as to whether the Government should continue to base its aviation policies upon the expectation that Federal aid will some day be no longer necessary.

WHAT IS A SUBSIDY?

Although the first Air Mail Act expressly provided that payments to carriers should not exceed four-fifths of the revenues derived from air mail, and although both the Congress and the carriers had agreed, on the record, at various times prior to 1934 that there was no valid basis or justification for the subsidy of air mail operations, nevertheless the trend of events moved inexorably in the direction of subsidy payments and with the exception of a few recent years, the carriers have had since February 1, 1928, the benefit of air mail payments which exceeded the air mail revenues.

It is clear that it would be improper to regard all of the air mail payments made to carriers as a subsidy because such a basis of determination would disregard the legitimate costs of the airlines in providing air mail services. Moreover, since there has been no consistent relationship between air mail postage rates and payments to the carriers, it is misleading to identify as a subsidy the excess of payments to the carriers over postal revenues, although the air mail "deficit" has been frequently used as a measure of the amount of the subsidy.⁶

In the opinion of some experts the true measure of the air mail subsidy is the excess of payments made to the carriers for the transportation of the air mail over that portion of the total operating costs of the carriers which is allocable to the performance of that service. This

⁴ Board of Investigation and Research, *Public Aids to Domestic Transportation*, p. 4.

⁵ PRESIDENT'S AIR POLICY COMMISSION, *SURVIVAL IN THE AIR AGE* (Washington: Gov. Print. Off. 1948), p. 102.

⁶ This is the measure applied by the Association of American Railroads in the report on *Air Transportation* submitted by the Sub-Committee on Air Transportation of the Railroad Committee for the Study of Transportation in 1947.

was the measure used by the Federal Coordinator of Transportation in a study of public aids to scheduled air transportation covering the fiscal years 1931-1938,⁷ and the same measure was used, with some modifications in detail, by the Board of Investigation and Research which undertook a similar study for the years 1939-1941.⁸

The problem is not altogether solved, however, by the acceptance of a definition such as that adopted by these investigators, because of the difficulty of separating the portion of airline operating costs properly attributable to the transportation of air mail from those incurred in connection with the passenger and other services provided.

The Civil Aeronautics Board has not as yet perfected a means for differentiating such costs. In connection with its testimony before the House Appropriations Committee, in February 1946, the Board submitted a statement concerning mail rates which said in part:

"No exact formula for allocating costs between the mail and non-mail services has been developed. . . . As more information becomes available for the measurement of traffic potentials in each particular category and reliable estimates of traffic by categories become feasible, it is contemplated that more specific procedure will be developed for the allocation of costs to the different types of traffic."⁹

Under the provisions of the Civil Aeronautics Act of 1938 the Civil Aeronautics Board is authorized to establish rates of compensation to air carriers for the transportation of mail on the basis of the cost of providing such *services* plus the *need* of the carrier for such additional revenue as may be necessary to enable him to continue in business. It is apparent from the foregoing quotation that the distinction made by the Board between "*need*" and "*service*" factors in any specific situation must be, to a considerable degree, an arbitrary distinction.

An Accepted Formula for Identifying Air Mail Subsidy

In view of this situation, the formula used by the Federal Coordinator of Transportation and the Board of Investigation and Research has been applied in this study to compute the amount and trend of the subsidy in air mail payments for the fiscal years 1938 through 1948.

This formula provides first for the isolation of operating costs which clearly are in no way attributable to carrying the mail. The Board of Investigation and Research identified specifically the salaries of the stewards and stewardesses, passenger supplies and expenses, traffic and advertising expenses, and the expense of consolidated airport ticket office operations.¹⁰

⁷ Federal Coordinator of Transportation, *Public Aids to Transportation* (Gov. Print. Off. 1940), pp. 129ff.

⁸ Board of Investigation and Research, *Public Aids to Domestic Transportation*, p. 451.

⁹ *Appropriation Bill for 1947*, p. 896.

¹⁰ For the purpose of this paper the "Recurrent Report of Financial Data" prepared by the Civil Aeronautics Board has been used. This is a quarterly sum-

The second step in the formula used by the Board of Investigation and Research was the pro-rationing of the net joint operating costs remaining, between mail, passenger and other services on the basis of the ratio of the ton-miles of each type of service to the total ton-miles of revenue service performed. The net joint costs for the years 1938 through 1941 were thus computed by the Board of Investigation and Research, and the same procedure was applied to the years 1942-1948 in the preparation of this study.

Finally, the formula takes account of capital charges on the basis of a twelve per cent return on the invested capital, this rate having been established at the time as sufficient to attract new capital into the industry. The resulting charges for each year were apportioned on the basis of the ratio of participation in total ton-miles of service performed as described for step two. This phase of the formula has been applied here in the same way and at the same rate.

The amount of the subsidy for each year is, of course, the difference between the total sums paid to the air lines for carrying mail, and the costs of the carriers attributable to the performance of this service as computed by the formula. Although the Civil Aeronautics Board, as indicated above, has not officially adopted a formula for ascertaining the cost of carrying the air mail, the general method used by the Federal Co-ordinator and the Board of Investigation and Research has been used by the Board in many air mail rate cases.¹¹

THE AMOUNT OF THE AIR MAIL SUBSIDY

The amount of the air mail subsidy as computed by the use of this formula for each of the fiscal years 1938 through 1948 inclusive is shown in Table I. Tables II and III present the detailed steps in the application of the formula, arranged in such a way that the data in each table is supported by data computed in the tables immediately following.

An allocation of total traffic, on a ton mile basis, among the several types of service offered provides the percentage used for computing the portion of net joint costs allocable to the air mail service.¹² In Table III the allowance for a return on capital assets is computed. The basis is the net depreciated value of the assets of the airlines. This usage conforms closely to that of the earlier studies mentioned above.

mary of financial data filed with the Board by certificated carriers. These reports include under "Operating Expenses" three items, which include no costs for mail operations. These are "Passenger Service," "Traffic and Sales," and "Advertising and Publicity." Officials of the Economics Bureau of the Civil Aeronautics Board agreed informally with the selection of these items as being wholly free of any mail costs.

¹¹ Cf. *Eastern Air Lines, Mail Rates*, 3 CAB 733, 755 (1942); and *Pennsylvania Central Airlines, Mail Rates*, 4 CAB 22, 42 (1942).

¹² Passenger miles were converted to ton miles for the purpose of this computation by allowing 200 pounds for each passenger including his allowable baggage and adding thereto the ton miles of excess baggage carried. This is the same as the basis used by the Federal Coordinator of Transportation and the Board of Investigation and Research.

TABLE I—COMPUTATION OF AIR MAIL SUBSIDY FOR FISCAL YEARS 1938-1948

16 Domestic Trunk Carriers *				
Fiscal Year	Total Air Mail Payments (a)	Costs Allocable to Mail (b)	Subsidy	
			Amount	per cent
1938	\$ 14,747,945	\$ 5,037,948	\$ 9,709,997	65.8
1939	17,108,249	5,164,172	11,944,077	70.0
1940	19,470,635	4,994,965	14,475,670	74.3
1941	20,280,178	6,031,937	14,248,241	70.3
1942	23,812,440	6,998,188	16,814,252	70.6
1943	22,519,647	10,052,544	12,467,103	55.3
1944	23,031,183	14,951,940	13,079,243	46.7
1945	35,544,065	20,633,702	14,910,363	42.0
1946	27,407,433	18,069,349	9,338,084	34.1
1947	23,967,417	13,355,891	10,611,526	44.3
1948	37,678,090	15,969,246	21,708,844	57.6
Total	\$270,567,282	\$121,259,882	\$149,307,400	
Average	24,597,026	11,073,626	13,573,400	55.2

Feeder Carriers				
1946	\$ 1,169,341	\$ 198,576	\$ 970,765	83.0
1947	3,805,989	216,929	3,589,060	94.3
1948	9,501,953	376,057	9,125,896	96.0

* Includes Territorial carriers up through fiscal year 1945. All data for years 1938-1941 inclusive were taken directly from the Report of the Board of Investigation and Research, House Document No. 159, 79th Congress, 1st Session, Gov. Print. Off. 1945. Table 76, Page 452.

(a) Data for years 1942-1945 inclusive were taken from the Annual Report of CAB, 1947, Gov. Print. Off. 1947, Appendix I, page 43. Data for 1946, 1947 and 1948 were supplied by Rates and Accounts Division of the CAB and take account of retro-active mail revenues applicable under CAB rate orders and "show-cause" orders issued through April 21, 1949.

(b) From Tables II and III.

TABLE II—COMPUTATION OF JOINT COSTS AND ALLOCATION OF JOINT COSTS TO MAIL SERVICE

16 Domestic Trunk Carriers					
Fiscal Year	Total Operating Expenses (a)	Direct Non-Mail Costs (b)	Net Joint Costs	% Alloc. to Mail (c)	Net Operating Cost of Mail Service
1938	\$ 41,667,608	\$ 6,190,833	\$ 35,476,875	13.0735	\$ 4,637,692
1939	46,336,164	7,087,654	39,248,510	12.0202	4,741,027
1940	59,110,742	10,174,984	48,935,758	9.4426	4,577,850
1941	80,618,852	14,083,049	66,535,803	8.3652	5,538,853
1942	92,764,030	16,864,169	75,899,861	8.8660	6,729,281
1943	82,206,353	18,307,164	63,899,169	15.0622	9,624,621
1944	107,312,055	23,453,584	83,858,471	17.2847	14,494,685
1945	148,744,140	32,722,489	116,021,651	17.1587	19,907,807
1946	236,482,440	61,267,472	175,214,968	9.4755	16,602,494
1947	359,504,418	84,521,133	274,983,285	4.4504	12,237,856
1948	390,403,260	81,379,807	309,023,453	4.6994	14,522,248

Feeder Carriers					
1946	\$ 1,313,180	\$ 61,322	\$ 1,251,858	15.1011	\$ 189,044
1947	4,946,511	572,984	4,373,527	4.5048	197,019
1948	12,196,236	1,578,100	10,618,136	3.3634	357,130

Note: All data for 1938-1941 inclusive were taken from Board of Investigation and Research, *op. cit.* Tables 1-4, Appendix AA, pp. 811-823.

(a) Data for 1942-45 were taken from CAB Annual Report for 1947, Appendix I, p. 43. Data for 1946, 1947, and 1948 are from CAB Report for 1948, Appendices G and H, pp. 50-53.

(b) Data for 1942-1948 represent the sum of following items from CAB Current Reports of Financial Data for Trunk Line Domestic Air Mail Carriers: "Passenger Service," "Traffic and Sales," "Advertising and Publicity."

(c) Based upon percentage of mail ton miles to total traffic on ton mile basis.

TABLE III—COMPUTATION OF CHARGES ALLOCABLE TO MAIL SERVICE

16 Domestic Trunk Carriers

<i>Fiscal Year</i>	<i>Net Operating Assets (a)</i>	<i>Allowance for Return on Assets (b)</i>	<i>% Allocable to Mail (c)</i>	<i>Net Capital Charge to Mail Service</i>	<i>Total Joint Operating & Capital Costs Allocable to Mail</i>
1938	\$ 24,377,952	\$ 2,925,353	13.0735	\$ 400,256	\$ 5,037,848
1939	27,169,488	3,260,337	12.0202	423,145	5,164,172
1940	35,447,382	4,253,685	9.4426	417,115	4,994,965
1941	49,265,094	5,911,812	8.3652	493,084	6,031,937
1942	25,275,144	3,033,017	8.8660	268,907	6,998,188
1943	23,675,321	2,841,039	15.0622	427,923	10,052,544
1944	22,045,248	2,645,430	17.2847	457,255	14,951,940
1945	35,253,982	4,230,478	17.1587	725,895	20,633,702
1946	129,004,188	15,480,503	9.4755	1,466,855	18,069,349
1947	209,350,948	25,122,114	4.4504	1,118,035	13,355,891
1948	256,592,753	30,791,130	4.6994	1,446,998	15,969,246
<i>Feeder Carriers</i>					
1946	\$ 526,001	\$ 63,120	15.1011	\$ 9,532	\$ 198,576
1947	3,683,052	441,966	4.5048	19,910	216,929
1948	4,689,352	562,722	3.3634	18,927	376,057

Note: All data for years 1938-1941 inclusive were taken from Board of Investigation and Research, *op. cit.*, Tables 1-4, Appendix AA, pp. 811-823.

(a) Depreciated cost of total property and equipment. Data for 1942-45 are from CAB Annual Report for 1947, Appendix K, p. 46. Data for 1946, 1947, and 1948 were supplied by the Rates and Accounts Division of the CAB.

(b) Computed at 12%.

(c) Based upon percentage of mail ton miles to total traffic on ton mile basis.

For recent years this basis is substantially above the net worth of the airlines as published by the CAB, although it is somewhat less than the total invested capital, if long term debt is included.

To arrive at the capital charge allocable to air mail, the value of the net depreciated assets was multiplied by 12%, and the result was multiplied in turn by a percentage representing the portion of joint costs allocable to air mail.

In Table II the net joint costs of operation are computed by adding the allocable portions of joint operating expenses and capital charges for each year; and in Table I the amount of the air mail subsidy is derived by subtracting the total costs of the air carriers allocable to mail service for each year from the total amounts paid to the carriers in the same years for the performance of this service.¹³

For the years 1938 through 1948 the amount of the subsidy, as thus computed, ranged from a low of \$9,338,084 in 1946, to a high of \$21,708,844 in 1948. The average for these years is \$13,573,400.

A comparison of the subsidy payments for these years with the subsidy payments for the years 1931 through 1937, Table IV, as computed by the Board of Investigation and Research indicates no trend toward the elimination of the subsidy. As a matter of fact, the average subsidy during the years 1938 through 1948 was nearly twice as great as that for the earlier period, which was only \$7,956,240.

¹³ The figures for the years 1938 through 1941 were taken directly from similar tables published by the Board of Investigation and Research. Figures for the years 1942 through 1948 were computed as a part of this study.

TABLE IV—AMOUNT OF SUBSIDY IN EARLIER YEARS (a)

<i>Fiscal Year</i>	<i>Excess of Air Mail Payments Over Cost</i>
1931	\$ 5,219,090
1932	10,793,112
1933	13,609,946
1934	6,045,446
1935	3,622,015
1936	8,203,086
1937	8,200,988
Total	<u>\$55,693,683</u>
Average	<u>\$ 7,956,240</u>

(a) From Board of Investigation and Research, *op. cit.*, p. 449 (except for "total" and "average" figures).

It seems evident from these facts that the carriers have no basis for a claim on the Post Office Department for more than the amount necessary to reimburse them for the service rendered, and that any payments above this amount must be explained on some basis that does not relate to the postal services as such. Under the Civil Aeronautics Act of 1938 they are authorized, in accordance with the "need" clause, in such amounts as may be necessary to permit the individual carriers to remain in business. Such payments would not be necessary, even under the "need" clause, if revenues derived by the carriers from non-mail services were sufficient to cover the costs incurred by them in providing such other services.

It has been charged¹⁴ that during the war years the volume of mail dispatched at air mail rates was so great that at times it greatly exceeded the available capacity of the certificated air carriers and that at such times some air mail was actually transported by the railroads, other common carriers, and by the Army Air Forces. To the extent that this was true the air mail profits of the Post Office Department are obviously inflated. The computation of the subsidy as presented in Table I would not be affected by such a situation, however, since this computation takes no account of total air mail revenues but includes only payments to air carriers for mail actually carried by them.

It is worthy of mention at this point that if payments to the carriers had been on a cost rather than a subsidy basis there would have been no postal deficit on air mail in any year since 1933.

The amount of the profit or loss to the Post Office Department from its air mail operations does not constitute a guide as to whether a subsidy exists. As a result of the very large volume of air mail during the war years 1943, 1944, and 1945 the Post Office Department realized substantial profits on its air mail operations. During these same years, however, the amount of the subsidy was consistently in excess of \$12,000,000. One of the principle reasons for designating as a subsidy the excess of payments to the carriers over the cost of carrying the mail is the fact that the carriers themselves have no responsibility for and

¹⁴ Association of American Railroads, *op. cit.*, p. 55.

incur no expenses in connection with promoting the use of air mail. Moreover, the air mail postage rates since 1938 have had no bearing on the rates at which carriers are reimbursed for carrying the mail.

The Post Office Department has experimented from time to time with different postage rates for air mail with a view to maximizing the return from the sale of air mail postage and thereby reducing the amount of the air mail deficit. Except insofar as different air mail postage rates have resulted in a variation in the *amount* of mail to be carried these experiments have had but little bearing on the payments to the carriers.

In the event the air mail costs and revenues of the Post Office Department were such that a profit was regularly earned by the Department on air mail business, the equitable adjustment would seem to be a reduction in air mail postage rates. Such an adjustment of air mail postage rates would have no bearing of course on the amount of subsidy in payments to the carriers, as that term is used here. So long as a profit is earned on air mail the users of that service are in effect subsidizing in some degree whatever other postal services may be operated at a deficit.

BIG FIVE MAIL RATE PROCEEDING

During 1947 three¹⁵ of the Big Four airlines which had been carrying mail at the established "service" rate of 45 cents per ton-mile, and Northwest Airlines, which had been carrying mail at a service rate of 60 cents per ton-mile, petitioned the Civil Aeronautics Board for an upward revision of these rates. The petitions of TWA, United Air Lines, and Northwest Air Lines requested that the revision be made retroactively effective. All of the petitioning carriers, except Eastern, operated at substantial losses during the twelve months ending September 30, 1947, and Eastern's rate of profit for the nine months prior to that date had shown a decided decline under the rate for the twelve months ended December 31, 1946. Each sought relief under the so-called "need" clause of the Civil Aeronautics Act (Sec. 406 (b)).

The Board's March 29, 1948 Statement of Tentative Findings and Conclusions¹⁶ is of interest because it established a new doctrine of "self-sufficiency" under which the five carriers are to be excluded from consideration under the "need" clause.

In the Board's opinion (p. 21 of the "Statement"),

"It is apparent that if all other revenue of the carriers is sufficient to permit the carrier to fulfill the objectives under the Act

¹⁵ Eastern Air Lines, TWA, and United Air Lines. American Air Lines, the other Big Four carrier, filed no petition.

¹⁶ On March 29, 1948, the Civil Aeronautics Board issued a "Statement of Tentative Findings and Conclusions" concerning these petitions and issued orders to each of the petitioning carriers and the American Air Lines, ordering them to "show cause" as to why a new basis of air mail payments should not be established. American was included because the new basis was to be applied as the new "service" rate for all carriers formerly on a 45 cents per ton-mile basis. Dockets 2849 (TWA), 3014 (United), 3021 (Eastern), 3211 (Northwest), and 3309 (American).

in respect to service other than the mail service, the need of the air carrier for mail compensation will then depend solely upon the costs of performing the mail service. . . . The status of self-sufficiency as contemplated by the Act may therefore be stated as representing that state in the carriers' economic development at which, under honest, economical, and efficient management, the volume and character of non-mail services required in the public interest may be fully supported by the revenues from such services under fair and reasonable rates to the public."

In the application of this principle, according to the statement, the Board will not be guided by the actual gains or losses of particular air line companies since these involve the exercise of business judgment over which the Board has no control and the consequences of which, including the results of mistaken judgment, ought to be borne by the companies themselves. In the words of the Board,

"the real test of self-sufficiency is not confined to the attainment of a profitable level of operations but rather is related to the existence of a reasonable opportunity for a carrier to sustain itself at a profitable level without Government subsidies" (p. 25).

After a detailed analysis of the operations and earnings of these five companies at the "service" rates in effect since 1942 the Board concluded that each of them is now "self-sufficient" and therefore no longer entitled to consideration under the "need" clause in the establishment of mail rates. It also determined that the new schedule of payments would not be applied retroactively.

This new schedule¹⁷ of payments is based on the principle that for the transportation of minimum loads, carriers are entitled to higher rates because of the heavy investment costs necessary to establish and maintain a mail service, and that as the volume of mail increases the

¹⁷ The schedule as proposed by the Board is as follows (p. 64 of "Statement") :

<i>Mail Ton-miles per day</i>	<i>Ton-mile Mail Rate Applicable to Each Block</i>
0—2,500	75.0 cents
2,501—15,000	70.0 cents
5,001—10,000	65.0 cents
10,001—15,000	60.0 cents
15,001—20,000	55.0 cents
20,001—25,000	50.0 cents
25,001—30,000	45.0 cents
30,001—and over	40.0 cents

The practical effect of the new rate schedule is presented by the Board in the following table, which applies the schedule to estimated mail volume for the immediate future (p. 65) :

<i>Carrier</i>	<i>Mail Ton-Miles</i>		<i>Annual Mail Pay</i>	<i>Effective Mail Rate Per Ton-Mile</i>
	<i>Annual Total</i>	<i>Daily Average</i>		
American	7,597,000	20,814	\$4,757,000	62.62c
Eastern	3,808,000	10,433	2,604,000	68.38c
Northwest	2,323,000	6,364	1,647,000	70.90c
TWA	8,368,000	22,926	5,142,000	61.45c
United	9,620,000	26,356	5,743,000	39.70c

The Board estimated (in a press release issued April 7, 1948) that the effect of its new schedule would be to *increase* the air mail payments to these carriers by a total of \$5,271,000.

rates of pay may be successively reduced because of the greater volume of service over which these and other overhead costs may be distributed.

There is no suggestion in the Board's statement in this case that the carriers concerned had suffered a loss on their air mail business at the old rate of 45 cents a ton-mile. The analysis of the financial and traffic data for the companies concerned for the twelve-month period ended September 30, 1947, in Table V discloses that air mail payments based on a rate of 45 cents a ton-mile were, with but one exception, more than adequate to cover all costs allocable to the mail service performed, as measured by the formula used here. The net total subsidy benefits for the group as a whole during this period amounted to \$718,983.

In view of the Board's earlier discussion of the principle of self-sufficiency and its expressed determination not to consider in the mail rates for these carriers the cost of any non-mail services, it is somewhat paradoxical that the actual effect of the order is to provide additional subsidy benefits to the carriers concerned.

The Board points out, in support of its new schedule of service rates, that the ratio of air mail to the total traffic of the carriers has been steadily reduced because of the increase in passenger and other business, and that a straight pro-ration of costs between mail and non

TABLE V—SUBSIDY FACTORS IN OPERATING DATA FOR BIG FIVE CERTIFICATED AIR CARRIERS FOR 12 MONTHS ENDING SEPT. 30, 1947 (a)

Items	American	Eastern	Northwest	TWA	United
Air Mail Revenues \$	3,297,000	\$ 1,496,000	\$ 1,264,000	\$ 2,844,000	\$ 3,952,000
Air Mail Costs	3,268,737	1,256,011	975,020	3,043,431	3,590,798
Subsidy or (deficit) \$	28,263	\$ 239,989	\$ 288,980	\$ (199,431)	\$ 361,202
Expenses—Total	\$ 81,118,000	\$44,480,000	\$22,074,000	\$49,624,000	\$ 69,879,000
Non Mail Items					
Passenger Service	6,217,000	3,748,000	1,480,000	3,920,000	6,672,000
Traffic & Sales	9,243,000	5,599,000	2,336,000	6,242,000	9,051,000
Adv. & Publ.	2,125,000	1,443,000	426,000	1,374,000	1,674,000
Total Non Mail	\$ 17,585,000	\$10,790,000	\$ 4,242,000	\$11,536,000	\$ 17,397,000
Net Joint Costs	\$ 63,533,000	\$33,690,000	\$17,832,000	\$38,088,000	\$ 52,482,000
% Allocable to Mail	4.4075	3.4288	5.0876	7.2370	6.1439
(A) Amount Allocable to Mail	\$ 2,800,216	\$ 1,155,163	\$ 881,172	\$ 2,756,429	\$ 3,224,442
Investment	\$ 88,584,000	\$24,510,000	\$15,372,000	\$33,048,000	\$ 49,691,000
Allocable to Mail	3,904,340	840,399	782,066	2,391,684	3,052,965
(B) Allowable Return (12%)	\$ 468,521	\$ 100,848	\$ 93,848	\$ 287,002	\$ 366,356
Total Air Mail Costs (A & B)	\$ 3,268,737	\$ 1,256,011	\$ 975,020	\$ 3,043,431	\$ 3,590,798
Traffic Data (ton miles)					
Passengers	144,811,100	88,955,100	36,711,200	72,380,800	118,723,200
Express	5,592,297	3,975,586	1,757,945	4,906,896	6,894,852
Freight	9,449,900	1,488,317	495,607	3,593,519	8,335,445
Air Mail	7,370,468	3,352,423	2,088,643	6,310,077	8,768,760
Total	167,223,765	97,771,426	41,053,395	87,191,292	142,722,257
% Air Mail	4.4075	3.4288	5.0876	7.2370	6.1439

(a) Note: Financial Data are from CAB "Release of Operating Revenue and Expense Statistics for the 12 months ended September 30, 1947; Domestic Air Carriers (Trunk Lines)." Traffic Data are from CAB "Release of Mileage and Traffic Statistics for the 12 months ended September 30, 1947; Domestic Air Carriers (Trunk Lines)."

mail services on the basis of this ratio is no longer a fair measure of the cost of the mail service, because it does not take account of certain minimum costs incidental to air mail service which should not be pro-rated.

As to these costs the Board states:

"Although the costs directly incident to mail service cannot be accurately measured at this time, they are sufficiently sizeable as to require recognition in the mail rate."

It is difficult to appraise the validity of the Board's policy in designating the new schedule as a service schedule because of the Board's acknowledged inability to measure in dollar terms the factors which warrant service payments above the total amount of the allocated costs.¹⁸

As to the frequency of schedules required for air mail service the Postmaster General has found in nearly every case that the needs of the Post Office Department could be met by fewer schedules than those actually maintained by the carriers for the convenience of passengers;¹⁹ although it is true that in some instances it has been necessary to schedule mail flights at hours when very few passengers desire to fly.

Finally it should be pointed out that the certificated air carriers as a group have always been paid at a higher rate per ton-mile of air mail than they have received in revenues for a corresponding amount of passenger business.

Commenting on the Board's new service rate as set forth in the Big Five case, the Postmaster General Stated:²⁰

"The uniform service rate formula which the Board proposes to apply in determining the mail compensation for the five carriers involved would provide an effective mail rate per ton-mile which exceeds the fair and reasonable rate necessary to compensate the carriers for the costs of carrying the mail plus a reasonable return upon the investment devoted to that service. The wide spread which exists between the Board's tentative finding of the estimated assigned costs of carrying the mail (which are not based on true costs) and the estimated effective rate under the proposed uniform service rate formula indicates a reliance upon the mail pay to support more than its just share of the costs. This could produce a 'need' rate rather than a 'service' rate."

¹⁸ It may be pointed out, however, that, generally speaking, planes on which mail is carried are built and operated primarily with a view to providing passenger transportation, and that the cost of providing the physical facilities required by passengers is probably greater than would be indicated by an allocation of joint costs on the ratio of ton-miles of passenger traffic to total traffic. Passengers require many cubic feet of air space for instance, in addition to the space they actually occupy. It is for their benefit that the air in the plane must be heated or cooled depending on the season. It is for their comfort and convenience that overstuffed seats are provided and that the interior of the plane is lighted. Much simpler and less expensive facilities are required for transporting the mail. Recent expenditures for larger, faster aircraft have not been made because of air mail service requirements but wholly because of a desire to improve passenger service.

¹⁹ Civil Aeronautics Board, *Regulatory Standards and Policies Under the Civil Aeronautics Act*, an unpublished document prepared by Mr. Albert R. Beisel, Jr., in 1945 while a member of the General Counsel's Office (mimeographed), p. 33.

²⁰ U. S. Post Office Department, *A Reply of the Postmaster General to the Civil Aeronautics Board's "Statement of Tentative Findings and Conclusions"* (in the Big Five Case), June 7, 1948 (mimeographed), p. 2.

These facts provide some basis for questioning the Board's designation of the new schedule as "service" rates, and for the contention that the amount of the air mail subsidy has been substantially increased by air mail payments to the Big Five carriers at these new rates.²¹

PROSPECTS FOR ELIMINATING THE AIR MAIL SUBSIDY

It is true that until the last year or two the average rate of payment per ton-mile has declined sharply. However, the total of air mail payments to carriers has not declined during the last ten years but has actually increased by substantial amounts over a portion of the period and it is now considerably greater than at the beginning of the period.

There has been a good deal of discussion in aviation circles recently about a proposal that all first class mail be sent by air, at regular first class rates whenever it would expedite delivery.

The suggestion that subsidy payments can be eliminated by increasing the volume of mail to be carried indicates a failure to understand the circumstances that have made a subsidy necessary. As we have seen, for the certificated air carriers as a group, the rates of air mail pay have consistently provided income to the carriers substantially greater than the costs they have incurred in carrying the mail. Payments in excess of such costs would not have been necessary were it not for the fact that revenues from passenger transportation and other services offered by the carriers have failed to cover the costs incurred in providing such services.

It is true that an increase in the amount of air mail carried would probably reduce the portion of costs allocable to each ton-mile of traffic carried. It is also true, of course, that as the volume of mail increases the amount of subsidy in the payment for each ton-mile of air mail service may be reduced, and this is probably one of the principal reasons why it has been possible to reduce the rate of air mail payments to the carriers as the volume of air mail increased. So long as the revenue derived from non-mail services fails to cover the cost of such services, however, some form of subsidy benefits will apparently be necessary regardless of the amount of air mail which may be carried. Moreover, the aggregate amount of subsidy payments necessary under present policies²² will always be governed by the extent of the losses incurred in the performance of other services, rather than by the volume of air mail carried.

²¹ It should be noted in this connection that by the establishment of uniform rates of mail pay, which provide for each of two or more carriers, the Civil Aeronautics Board has been more liberal than the Civil Aeronautics Act requires in authorizing payments under the need clause. For if the rates of mail pay are such that they meet the "need" of the least "profitable" carrier, then the same rates of pay will provide for the better carriers some amount greater than they actually require to enable them to continue the performance of air transportation services.

²² The present arrangements concerning air mail payments have put the Post Office Department very much "in the middle." That Department is obliged to pay air mail carriers at rates established by the Civil Aeronautics Board. Ordinarily the Department has had no advance notice of the Board's decisions,

TOTAL COSTS OF AIR TRANSPORTATION

It was noted at the beginning of this paper that the costs of commercial aviation to the Federal Government include not only the air mail subsidy but also the costs incident to the maintenance and operations of the Federal Airways, the Federal portion of airport construction costs, and the cost of air weather services.

In Table VI there is presented a combined profit and loss statement showing the net profit or loss for the combined system during the years 1944 through 1948 and indicating what the earnings position of the scheduled air carriers would have been if they had been obliged to meet the full cost of the combined operation. According to this table, the scheduled air carriers could have met the full cost of the combined operation during 1944 and 1945 and yet retained some margin of profit. Absorption of the total cost in 1946, however, would have converted a profit into a loss and in 1947 it would have increased the amount of the loss from about \$30,500,000 to more than \$64,000,000. For 1948 the loss would have been increased from about \$27,000,000 to more than \$66,000,000.

The total estimated cost of the scheduled air carrier system for 1944 was \$132,604,463, of which the Federal Government paid 19.07%. The total estimated cost for 1948 was \$464,186,015, an increase of approxi-

TABLE VI—SCHEDULED AIR CARRIERS JOINT PROFIT AND LOSS STATEMENT
(Showing federal and private participation in a joint undertaking
to provide air transportation)

	1944	1945	1946	1947	1948
<i>The Air Line Companies' *</i>					
Non-Mail Rev.	\$106,010,172	\$156,320,249	\$224,748,386	\$316,775,341	\$350,139,397
U.S. Mail Rev.	28,031,183	35,544,065	28,576,774	27,773,406	47,180,043
Total Revenues	\$134,041,355	\$191,864,314	\$253,325,160	\$344,548,747	\$397,319,440
Operating Exp.	107,312,055	148,744,140	237,795,620	364,450,929	402,599,496
Oper. Profit †	\$ 26,729,300	\$ 43,120,174	\$ 15,529,540	\$ (19,902,182)	\$ (5,280,056)
Deduct:					
Air Mail Subsidy	13,079,243	14,910,363	9,338,084	10,611,526	21,708,844
Adj. Profit †	\$ 13,650,057	\$ 28,209,811	\$ 6,191,456	\$ (30,513,708)	\$ (26,988,900)
Deduct: <i>Estimated expenses borne by Federal Government.</i>					
Federal Airways	9,692,689	10,303,891	20,224,292	26,716,627	32,531,212
Airport Const.	1,533,578	2,715,082	4,598,576	4,549,176	4,337,063
Weather Services	986,898	1,079,880	1,647,454	2,790,342	3,009,400
Total Estimated					
Federal Costs	\$ 12,213,165	\$ 14,098,853	\$ 26,470,322	\$ 34,056,145	\$ 39,877,675
Joint Profit †	\$ 1,436,892	\$ 14,110,958	\$ (20,278,866)	\$ (64,569,853)	\$ (66,866,575)

* Note: Data for 1944 and 1945 are from CAB Annual Report for 1947, Appendix I, p. 43. Data for 1946, 1947, and 1948 represent totals of data for trunk and feeder carriers as published in CAB Annual Report for 1948, Appendices G and H, except that mail revenues have been adjusted for retroactive payments authorized through April 21, 1949. All data are on a fiscal year basis.

† Figures in parentheses are losses.

many of which are retroactive. As a result it has frequently been necessary for the Department to request supplemental appropriations from the Congress, and to explain and defend an action taken by another agency.

Post Office officials have urged that the Civil Aeronautics Board be given responsibility for justifying the need for appropriations to provide subsidy payments to the carriers. It is pointed out that such an arrangement concerning maritime mail services is now operating very satisfactorily.

mately 250% over 1944, of which the Federal Government paid an estimated total of 13.27% or \$61,586,519. Accurate figures are not available for the years before 1944. Although the Federal Airways and the airports used by the scheduled carriers had in 1944 a very considerable latent capacity, the actual costs of Federal participation in our air transport system more than doubled during the five year period; this suggests that the continued growth of scheduled air carrier business will probably impose an increasing burden on the Federal taxpayer, instead of reducing it as aviation enthusiasts have heretofore confidently expected.

Analysis of Costs and Revenues

The costs and revenues incident to the air mail services of the carriers have been considered above. It is pertinent to give some consideration at this point to the cost-revenue relationships for other types of traffic.

The *revenues* derived from passenger, freight and express service are clearly separated in the published reports of the Civil Aeronautics Board. To arrive at separate *cost* figures for each of these types of traffic total joint costs were apportioned, as in the case of air mail, in accordance with the proportion of the ton-miles of each type of traffic to the total ton miles of transportation service provided. The profits and losses by types of traffic as thus computed are shown in Table VII.

TABLE VII—SUMMARY OF PROFITS AND LOSSES BY TYPES OF TRAFFIC
(Under Present Arrangements) *

	1944	1945	1946	1947	1948
Passenger Business	\$ 9,858,176	\$22,882,176	\$ 602,236	\$(36,718,562)	\$(25,234,703)
Express Business	2,327,971	3,708,779	1,566,251	994	(2,959,211)
Freight Business	—	—	(25,148)	(2,716,831)	(12,210,435)
Misc. Revenue (a)	1,003,476	819,327	1,099,049	2,629,167	1,740,060
Non-Sched. Transp. (a)	7,624	63,539	501,917	1,564,521	1,083,567
<i>Net Income From</i>					
Non-Mail Business	\$13,197,247	\$27,473,821	\$ 3,744,305	\$(35,240,711)	\$(37,580,722)
Air Mail Profit (b)	13,536,498	15,636,258	11,785,236	15,338,531	32,300,665
Total Profit or Loss on Current Basis	\$26,733,745	\$43,110,079	\$15,529,541	\$(19,902,180)	\$(5,280,057)

* Note: Derived from revenues and expenses for 1944 and 1945 as reported in CAB Annual Report for 1947, Appendix V, p. 43, and for 1946, 1947, and 1948 as reported in Appendices G and H (pp. 50-53) of the CAB Annual Report for 1948. Total joint expense was allocated to several types of traffic on basis of the ratio of the ton miles of each type of traffic to the total ton miles of traffic.

(a) No expenses were charged against these items.

(b) Revenues less allocable portion of costs with no allowance for capital charges.

The results of such an analysis as applied to freight revenues and costs are rather startling for they show that on the basis of such a cost distribution the carriers lost in 1948 more than \$12,000,000 on their freight business alone. See Table VIII.

The policies of the carriers and of the CAB with respect to freight rates present something of a conundrum when compared with their policies with respect to air mail rates. The average rates for the carry-

TABLE VIII—COMPUTATION OF PROFIT OR LOSS ON FREIGHT BUSINESS

Year		Net Joint Costs (a)	Costs Allocable to Freight Per cent (b)	Freight Amount (c)	Freight Revenues (c)	Profit or (Loss)
1946	(T)	\$175,214,968	.9610	\$ 1,683,816	\$ 1,658,668	
	(F)	1,251,858			
	Total			\$ 1,683,816	\$ 1,658,668	\$ (25,148)
1947	(T)	\$274,983,285	3.2364	\$ 8,899,559	\$ 6,187,359	
	(F)	4,373,527	.1468	6,420	1,789	
	Total			\$ 8,905,979	\$ 6,189,148	\$ (2,716,831)
1948	(T)	\$309,023,453	7.4506	\$23,024,101	\$11,015,497	
	(F)	10,618,136	2.2960	243,792	41,961	
				\$23,267,893	\$11,057,458	\$ (12,210,435)

(a) See Table II, Column 3 (T—Trunk Lines; F—Feeder Lines).

(b) Based upon ratio of ton miles of freight to total ton miles of traffic.

(c) CAB Annual Report for 1948, Appendices G and H, pp. 50-53. Freight data for Feeder Lines for 1946 was not separately reported.

ing of air mail, as established by the Board in the Big Five case in the spring of 1948, were in excess of *sixty cents* a ton mile. These rates have been increased by subsequent actions of the Board. During the same year the Board established a minimum rate of only *sixteen cents* a ton mile for freight shipments of 1,000 ton miles or less and a rate of only *thirteen cents* a ton mile for shipments of air freight in excess of 1,000 ton miles.²³ The discrepancy between these two rate schedules becomes even more surprising when it is noted that the Post Office department performs all important handling of air mail on the ground before and after air mail flights, whereas the carriers are obliged to provide the necessary ground facilities and services for the handling of their air-freight business. It appears, therefore, that the encouragement of air freight business on the part of the certificated carriers is resulting in a need for larger subsidy payments than would otherwise be the case.

Profits and losses attributable to passenger business fluctuated widely during the years 1941 through 1948. This type of business earned a high of \$22,882,176 during the fiscal year 1945 when the war was making its maximum demands on all types of passenger transportation facilities. It sustained a loss of \$36,718,562 in 1947, and a loss of \$25,234,703 in 1948.

Passenger traffic accounts for the bulk of the business of the scheduled air carriers. As a proportion of the total ton-miles of pay load carried, it ranged during the period under consideration from a low of 76.24% to a high of 88.56%. It is evident from this fact and in view of the earnings record with respect to air mail and express that it is the passenger business which has given rise to the need for financial and other assistance from the Federal Government.

If the scheduled air carriers had been obliged to absorb their proportionate share of the cost of facilities and services provided at Government expense, and if there had been no subsidy in the air mail payments, the passenger business would have earned no profits during

²³ Civil Aeronautics Board, *Annual Report*, 1948, p. 19.

the years 1944-1948 and the losses in 1947 and 1948 would have been \$81,386,233 and \$86,821,222 respectively. It is evident that air line passengers paid only a fraction of the cost of the services they purchased with their tickets.

THE ECONOMICS OF AIR TRANSPORTATION

"There are two cardinal principles in successful air transportation: keep your planes in the air and keep them full."²⁴ Conformance with these principles is essentially a problem of correlating the number, size, and utilization of aircraft with the number of persons who desire to fly, in such a way as to maximize the utilization of aircraft capacity.

It is not possible, of course, in the maintenance of an air transportation business on a common carrier basis to utilize all available capacity on all flights scheduled; and it is not possible, without turning passengers away, to ensure that each passenger who leaves at an intermediate point will be replaced at that point. In addition, there are certain weather and seasonal factors which cannot be exactly compensated for in the amount of passenger space made available. Characteristically, therefore, air carriers must follow the practice of providing on scheduled flights more passenger carrying facilities than will ordinarily be required.

Mr. Hugh Knowlton estimates that the maximum load factor which an air carrier can ordinarily obtain is between 70 and 75 per cent.²⁵ Professor Claude Puffer is of the opinion that an air line cannot ordinarily expect to maintain an annual load factor much in excess of 65 per cent.²⁶ The actual load factor of the scheduled air carriers, as a group, reached a high of 89.50 per cent in 1944. This was during the war, at a time when the demand for air travel was so consistently in excess of capacity that the Government was obliged to establish a system of air travel priorities in order to ensure that persons traveling on business connected with the war could be assured of seats on airplanes.

The break-even point characteristically fluctuates inversely with the spread between the average fare and the average cost per available seat mile. Thus in 1941, when the spread was \$0.0191, the break-even point was only 64.57 per cent. Unfortunately, the average load factor for that year was considerably less so that a loss was sustained on passenger traffic. In 1944, on the other hand, when the spread was only \$0.0094, the break-even point was 81.96 per cent. Because the actual load factor was 89.50, a worthwhile profit was earned on passenger business that year. In 1946 when the spread was only \$0.0064 the break-even point was the highest for the period, being 86.45 per cent.

²⁴ KNOWLTON, *AIR TRANSPORTATION IN THE UNITED STATES; ITS GROWTH AS A BUSINESS* (Chicago: University of Chicago Press, 1941), p. 48.

²⁵ *Ibid.*, p. 49.

²⁶ PUFFER, *op. cit.*, p. 48. Note: The term "capacity factor" might well be used to designate the maximum possible load factor.

With a load factor of 85.92 per cent, a small loss was sustained on seats sold that year, but this was more than offset by the revenues from excess baggage.

If the airlines had been obliged to absorb the costs covered by the subsidy during the years 1944 through 1948, the break-even point, other factors remaining unchanged, would have been consistently higher than any actual load factor ever achieved by the scheduled air carriers, as a group, over the course of a full year's operations. As a matter of fact, during the fiscal years 1944 and 1948, the air carriers could not have covered their costs, at the fares then in effect, even if they had consistently operated their planes at 100 per cent of passenger capacity.

The load factor of 70.99 per cent for the fiscal year 1947 represents, according to the authorities cited above, a reasonable expectancy under normal operating circumstances. This load factor resulted from an actual 6,224,356,000 passenger miles for that year. Presuming that the operating costs were held to a minimum and that the average fare could have been raised to any necessary point without loss of business, it would have been necessary to charge a rate of \$0.0610 per passenger mile in order to obtain total revenues sufficient to cover the full costs of operation including the costs covered by the Federal subsidy. Such a rate of fare would have provided a spread of \$0.0181 over the total cost per available seat mile. It is exceedingly doubtful, however, whether any such fare could have been charged without a serious loss of passenger business.

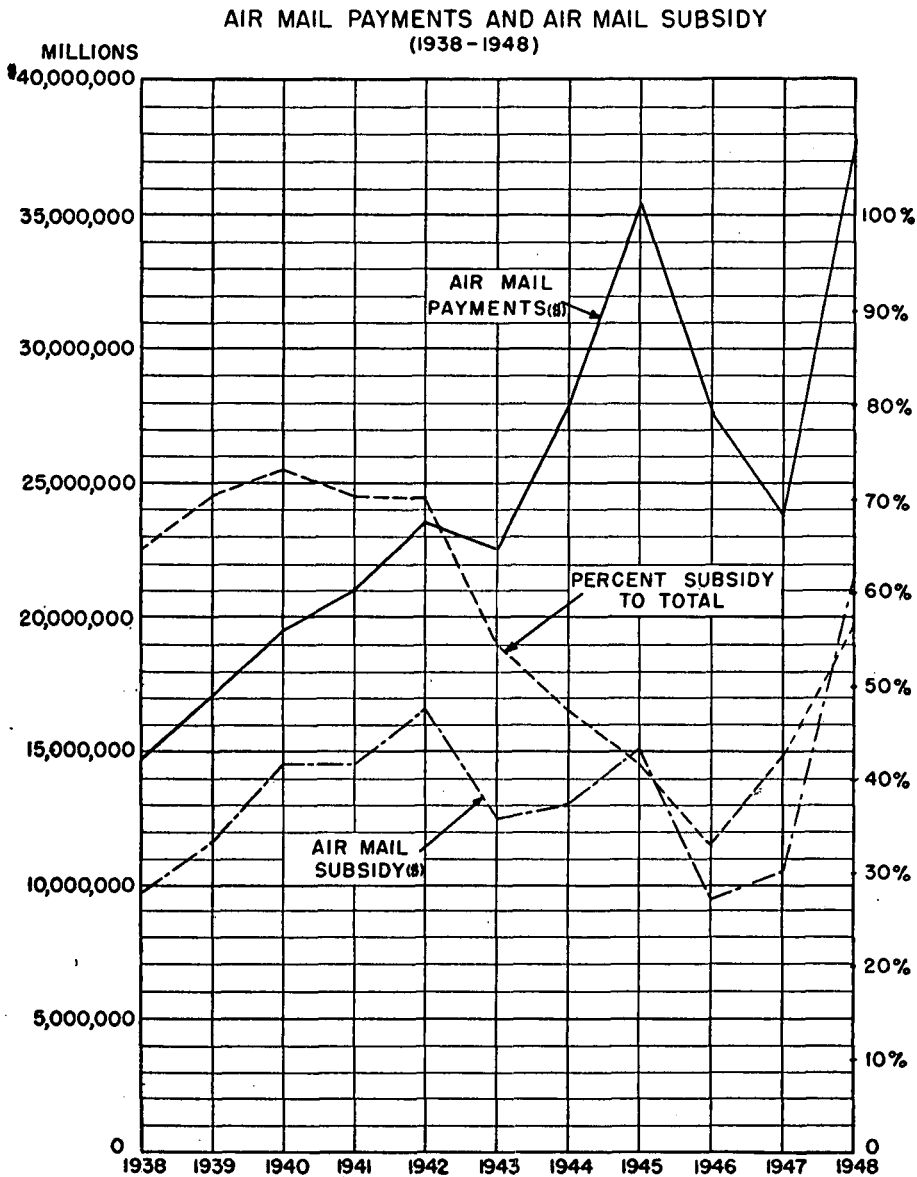
THE QUEST FOR VOLUME

The development of the commercial aviation industry has been predicated on the assumption that increased volume will result in lower unit costs. Federal agencies responsible for the Government's policies toward aviation have supported the industry in that point of view.

There is a good deal of evidence to indicate that this assumption has been warranted over the years since 1926. The increase in the number of passengers carried and the reduction in plane-mile costs and in passenger fares since that year has been truly remarkable.²⁷ If these trends were to continue, they might culminate in an ultimate relationship between fares and operating costs which would thereafter assure the profitable performance of air passenger business. There are certain facts, however, which suggest that the prospect of further expansion in the demand for air travel is now subject to some rather definite limitations.

²⁷ A substantial portion of the decrease in costs achieved by the airlines has been made possible by the improvements in aircraft design. The extent to which planes may be made still more efficient is a question for aeronautical engineers. Cost data for recent years suggest, however, that the rate of improvement may be levelling off since the introduction of the large new post war planes.

The airlines themselves appear to have undertaken their post war expansion program with an optimism which took too little account of the absolute limits of the demand for travel at rates they could reasonably expect to charge; for, in May, 1946, the estimated annual capacity of planes owned and on order by the certificated air carriers was 20.9 billion passenger miles. Utilization of all this capacity would require passenger traffic at more than *three* times the rate actually achieved in 1946. The improbability of such an achievement is emphasized by the fact that such a volume of traffic would equal or exceed the revenue passenger miles in railroad coaches and Pullman cars for any of the pre-war years from 1937 to 1940.²⁸



One of the principal factors detracting from current use of air travel is the failure to maintain regular schedules. This failure is primarily a consequence of bad weather conditions. There is some prospect that the technical problems of all-weather traffic control will be solved and that ultimately scheduled air carriers may hope to maintain service with a regularity approaching that of the railroads. This prospect lies in the \$1,113,000,000 Radio Technical Commission for Aeronautics SC-31 Program.

Unfortunately, the cost involved in this project is so very great as to make it exceedingly improbable that the scheduled air carriers, even with a great increase in volume could earn enough to enable them to pay their proportionate share of the installation costs. Moreover, the annual cost of operating the Federal Airways will be so greatly increased by this program that even if the installation costs were written off as an unrecoverable item, it is doubtful whether the proportionate share of the annual operating costs could be carried by the airlines.

In other words, the technical means for establishing regularity of airline operations, and for greatly improving the margin of safety in air travel may be available within a comparatively short span of years. But the proposal to carry out such a plan seems uneconomic because it will probably cost more than it can ever earn. It must be justified, therefore, primarily on the basis of its potential contribution to our national defense.

The circumstance which makes the RTCA proposal uneconomic, is the fact that, barring another war or a very drastic change in our national habits, the maximum number of potential travelers, whether by air or by rail, is definitely limited, and the combined capacity of rail and air carriers seems to be rapidly approaching that limit.

Assuming that the RTCA program were to be adopted, and that adequate safety and regularity of airline operations were established, the airlines could scarcely hope to do better than double their present rate of operations. It seems exceedingly unlikely, in view of the information now available, that such a volume of business would provide revenue sufficient to cover their costs plus the greatly increased costs, to the Federal Government incidental to the operation of the Federal Airways under the RTCA plan.

The railroads contend, and some corroborating evidence has been presented here, that the rapid development of air travel, in competition with first class rail travel has been possible only because of the very substantial assistance afforded the aviation industry by the Federal Government.

The essential obstacle that confronts the air carriers in their efforts to compete with other types of transportation is that the airplane is a very expensive vehicle to operate. Unlike most forms of transportation, it must not only generate sufficient power to pull itself forward, but

²⁸ American Association of Railroads, *op. cit.*, p. 77.

must also generate sufficient power to maintain itself in the air over sustained periods of time.

It seems clear that the prospect for the economic self-sufficiency of scheduled air carriers, under the present policies of the Federal Government, the present and probable future demand for air travel, and the continued utilization of the present, practicable, flight techniques, is very dim indeed. It seems probable that the certificated air carriers will continue to require Federal aids in one form or another in the foreseeable future and that the growth of commercial aviation will probably require greater, instead of less, expenditures on the part of the Federal Government if it is to continue its present role in the joint enterprise of providing commercial air transportation.

If this is true, it is a matter of very considerable importance, for it negates one of the major promises on which Federal aids to aviation have heretofore been justified. Federal assistance to aviation has been viewed as aid to a new and expanding industry which would some day become economically self-sufficient, and earn enough revenues so that the Government could recover some portion if not all of the expenditures it has made with funds derived from general taxation. If the foregoing analysis is sound, it means that further expansion of passenger business by scheduled air carriers no longer offers the prospect of ultimate economic self-sufficiency, but will probably result in an increasing demand for subsidies, in one form or another, to be paid by the Federal Government.

WHO BENEFITS?

There remains for consideration a brief analysis of the question: who or what has been the beneficiary of the air mail subsidies paid?

It is obvious that the subsidies have made it possible for the commercial air line companies to stay in business and to develop the arts of aerial navigation. The owners and operators of air lines have thus benefitted directly from such payments.

It has been pointed out that since its inception the delivery of mail to persons in rural areas, the so-called *rural free delivery* service, has cost the Government far in excess of the postal revenues earned on this class of mail. Yet there has been no complaint about the subsidy of the rural mail carriers, many of whom in recent years have carried such mail on a contract basis. As a matter of fact, most people would agree that in this case it is not the rural mail carrier but the farmer whose operations are subsidized by this extra service.

The situations are not altogether parallel, since presumably the payments to the rural carriers approximate the cost of the service rendered, whereas we have shown that payments to air carriers have been substantially in excess of the true costs incurred by them in carrying the air mail.

This discrepancy suggests the possibility of yet another beneficiary of the air mail subsidy, viz. the air line passenger. To the extent that

the air mail subsidies have been applied against losses incurred in the performance of passenger carrying services, the passengers themselves have benefited, since without the aid of the air mail subsidy the carriers would presumably have been obliged to charge a higher passenger fare; in which event of course, some of the air passengers might have elected to travel by other means.

CONCLUSION

Having reviewed the history of the Federal subsidy to commercial aviation, and having noted the nature and trend of the several types of subsidy benefits, it is appropriate to consider what conclusions may be drawn from this study. The more important of these may be enumerated as follows:

(1) It seems evident that the facts of the situation, as disclosed and analyzed in this study, offer little hope or encouragement to those who still expect that commercial air transportation can become truly self-supporting within the framework of existing legislation, administrative policies, and flight techniques.

(2) It seems probable that further expansion of the commercial air transport industry, under present circumstances, will result in *greater* rather than less subsidy benefits in the years ahead. This conclusion is based primarily on the fact that the expansion will almost surely require increased direct expenditures on the part of the Government for the improvement, maintenance, and operation of the Federal Airways, for the improvement of air terminal facilities, and for expanded weather services.

(3) There is no present prospect for the elimination of the air mail subsidy. The average amount of this subsidy as herein computed for the years 1938 through 1948 was nearly twice the average amount of the subsidy for the years 1931 through 1937; in spite of the fact that the volume of all types of business carried by the certificated carriers increased several fold during the latter period. It should be emphasized here that the need for this subsidy will continue so long as non-mail services of the carriers fail to pay their own way, and that increasing the volume of air mail to be carried offers no solution to the problem. Special consideration should be given in the immediate future to the influence of the increasing volume of air freight on the carriers' need for air mail subsidy payments.

(4) Although representatives of the industry have talked recently in terms of the "restoration" of a "sound financial situation," there has never been a time, with the exception of the abnormal years of peak wartime traffic, when the certificated air carriers, as a group, could have paid their own way, including their fair proportion of the cost of the Federal Airways, airports, and weather services.

(5) The foregoing analysis suggests that Government and industry officials may have been unwise in attempting the development of a "mass" air transportation system. The costs inherent in the operation of aircraft, and the limited need for transportation at very high speeds appear to preclude bona fide competition with railroads and buses for large volumes of traffic.

It is fair to ask on what grounds it is held that a subsidy to the domestic air commerce industry ought not to be continued indefinitely. In reply to such a question it is pertinent to list some of the more important considerations which have justified Federal subsidies to private enterprise. Among the more important of these are the following:

(1) The need to equalize differences in costs for companies competing in international trade; as in the case of the merchant marine, and the "overseas" air carriers.

(2) The general public acceptance of the need for assistance to "infant" industries which promise great benefits to the public at large. The land grants to the railroads were warranted largely on this basis.

(3) The need to offer some inducement for "voluntary" cooperation in crop control programs which benefit not only millions of farmers, but which also result, it is argued, in benefits to consumers through the stabilization of food prices.

(4) The need in times of national emergency to insure maximum utilization of all capacity for the production of war goods without permitting prices in general to rise to a level sufficient to cover the costs of marginal producers.

The subsidy to commercial aviation in its "infancy" has been justified and accepted under the second of the considerations listed above. Once it was evident that the industry in its early stages was not able to support itself, this consideration became the dominant factor in the continuation of various Federal aids. Such an argument can hardly be sustained, however, once the industry has outgrown its "infancy," and the data presented above indicate that that time has now arrived.

The potential military value of our commercial air transport system affords a special basis for providing Federal aid, and some such aid would probably be continued on the ground of military necessity even though the expectation that the airlines could become economically self sufficient were abandoned. This fact, however, should not preclude a reconsideration of existing Government policies with a view to finding some means for eliminating the subsidy, if that is possible, or for ensuring that subsidy benefits will be kept as small as possible in the general interests of economy.

Suggested Steps Toward a Solution

This study has been directed primarily toward a more adequate understanding of the problems presented by the present subsidy of commercial aviation. It has not been directed toward the development of solutions to these problems. Nevertheless, the data that have been considered here afford some basis for *suggestions* as to steps that might be taken to improve the situation.

(1) The first, and most obvious, of the suggestions that can be made is that an investigation of the type attempted here should be undertaken by some group having the resources and authority of the Federal Government.

Such a study might be specifically authorized by the Congress or it might be undertaken by the Secretary of Commerce pursuant to his general responsibilities for the welfare of the aviation industry. Although the Civil Aeronautics Board and the Civil Aeronautics Administration could contribute much to such an investigation, they are so closely identified with the present arrangements that more objective results would probably be obtained if responsibility for the project were placed elsewhere.

Similar studies were made by the Federal Coordinator of Transportation for the years 1934 through 1938, and by the Board of Investigation and Research for the years 1938 through 1941. The work begun by these groups needs to be brought up to date to take account of the changes brought about by the war and by the industry's achievement of technological maturity. Moreover, the aviation aspects of these earlier studies were somewhat obscured by the fact that the studies were concerned with subsidies to all forms of transportation.

(2) Pending the completion of such an investigation, which would presumably include a consideration of the possible bases for the allocation of air carrier expenses between air mail and other traffic, it is suggested that the formula developed by the Federal Coordinator of Transportation should be adopted by the Civil Aeronautics Board, and that the Board should include in its statistical reports information as to the amount of subsidy in air mail payments as thus computed.

Publication of such data on a current basis would provoke lively discussion among the carriers themselves as well as among the Federal agencies concerned and would undoubtedly result in many suggestions for improvement in the formula.

(3) It is suggested that the Secretary of Commerce, in collaboration with the Secretary of National Defense, should establish a basis for the allocation of the expenses of the Federal Airways, the air weather services, and the Federal portion of airport construction costs, among the scheduled air carriers, other private flyers, and the military air forces; and that the Secretary of Commerce should develop specific proposals for making an appropriate recovery of Federal expenses from the scheduled air carriers and other private flyers who benefit from the use of these facilities.

The Civil Aeronautics Administration took some steps in this direction in its study of 1946 on "Charging for Federal Airways." The

investigation should be extended and pressed forward, however, by persons working at a higher more disinterested level than can probably be achieved within the CAA itself.

(4) If it is desired to put the industry on a self-sufficiency basis Section 406(b) of the Civil Aeronautics Act should be revised in such a way as to eliminate any Federal guarantee of the continued solvency of certificated carriers.

The Civil Aeronautics Act presumes the operation of commercial aviation by private companies under limited competition. In an economy based on private enterprise and initiative, it is a part of the function of competition in any market to eliminate so much of the supply as cannot be made available at prices prevailing in that market. By this means, the total number of suppliers at any one time is roughly proportional to that which the demand will support. The failure of certain firms is quite as important in maintaining this balanced relationship as the success of others.

There is undoubtedly a limited demand for air transportation at a price sufficiently high to cover all costs of operation. If it is our policy for commercial aviation to continue on a private enterprise basis then the processes of competition should be permitted to operate in such a way that the present excess in the facilities offered would be eliminated by the failure of the weaker firms. If such a policy seems harsh it should be remembered that it is no different from that which prevails in nearly every other industry.

So long as Section 406 (b) stands in its present form, there is reason to believe that capacity will always exceed demand, and that the Federal Government will always be obliged to cover the losses arising from this fact. As one transportation expert phrased it some months ago, "The competition we are subsidizing in the aviation industry is competition for subsidies!"

If a policy other than competitive private enterprise were adopted for our domestic air transport system, the guarantee afforded by Section 406 (b) would no longer be necessary.

(5) It is suggested that so long as there is no significant margin of profit in the air transportation business, the policy of certifying competitive carriers over the same routes should be discontinued.

On this point the industry's criticism of the Civil Aeronautics Board appears to be sound. Granting that carriers have inaugurated more schedules than they should have, as contended by the CAB, it seems probable that they have done so, in part, in order to prevent loss of business to other carriers. The result, of course, has been lower load factors and heavier losses for all carriers concerned.

(6) If an official study similar to that attempted here, and the experience of the next two or three years confirms the indications of this report that commercial aviation on a large scale may be inherently unprofitable under the present competitive private enterprise basis, it is suggested that consideration should be given to the following alternatives:

(a) The designation or organization of a single private carrier for each route pattern, with a consolidation of all existing facilities un-

der the control of that carrier; with the provision that that single carrier would operate as a true public utility, under the close supervision of a Federal regulatory agency, and that the schedule of rates for services to the public should be subject to review and approval by such agency. (b) The nationalization of the air transport industry.

The first alternative is supported by the probability that a single carrier, relieved of the necessity for meeting competition, could establish its schedules between the cities served on the basis of the total demand for such transportation, and could offer such capacity on each schedule as would maximize its average load factor. It seems possible, that on such a basis, a private carrier might cover all costs and earn a fair return on its invested capital.

As to the second alternative, it may be pointed out that only in the United States has air transportation on a large scale been undertaken on a private enterprise, competitive basis. In every other country of size or importance, air transport service is either provided directly by the government, or the government holds a substantial and controlling interest in companies in which there is some private participation. In either case there is no attempt to establish competition among companies chartered or operated by the same national government.

Such an alternative would probably be more palatable here, in the event it is decided that the aviation industry should be built and maintained on the basis of military necessity rather than on the basis of economic demand for air transportation.

The Policy Behind the Policies

In spite of the industry's criticism of its treatment at the hands of the Federal Government, impartial observers would surely agree that the civil aviation industry in the United States enjoys today a uniquely favorable relationship with the Federal Government.

The scheduled air carrier industry has grown at a rapid rate during the war and post-war years. A comparison of the capacity it is now equipped to offer with the potential demand for air travel suggests that opportunities for further growth in the near future are definitely limited. It can scarcely be regarded any longer as an "infant" industry.

Yet the carriers have found it necessary to ask for substantial increases in the rates at which they are paid for carrying the mail. Moreover, appropriations from the general revenues for the improvement and operation of commercial air navigation facilities are steadily increasing, with no prospect that any portion of these costs can ever be recovered from the air line operators.

These facts suggest that the time is not far off, if it has not already arrived, when the Federal Government should reappraise the premises on which it has encouraged and sustained the development of commercial aviation, that the policy behind the policies should be revised, and that some means should be sought whereby the operation of essential air transportation services can be performed in a more equitable, more economical way.