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AIRLINE SIZE, PROFITABILITY, MERGERS AND REGULATION

SAMUEL R. REID*

JAMES W. MOHRFELD**

In recent years domestic airlines have increasingly considered merger as a solution to numerous problems. In this article Mr. Samuel Reid and Mr. James Mohrfeld examine the actual effects of mergers in the airline field. Their conclusions, based on an analysis of available statistics, is that merger may not be the best solution to all airline problems.

I. INTRODUCTION

DURING the past few years the domestic airlines have displayed an increased propensity to seek approval for business combinations as a means of correcting performance patterns.¹ The rationale for this movement is familiar to observers of the business scene: that is, the persistent optimism that somehow mergers will permit firms to realize certain scale economies, with increased efficiency resulting in higher levels of profitability.

An approved merger will increase the size (and scale) of the surviving firm instantaneously; there are, however, many examples of firms that have failed to realize the expected benefits associated

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¹ Early in 1971, the Civil Aeronautics Board approved the American Airlines-Trans Caribbean merger. Hearings on the American Airlines-Western Airlines merger were concluded in the summer of 1971. Other applications included National-Northwest and Northeast-Delta. Also, Pan Am and TWA held merger discussions.

with large scale. The classic example in the transportation industry is the infamous Penn-Central merger which has become the largest single economic failure in the history of business and commercial affairs.

In the thirty-five years of regulation by the Civil Aeronautics Board, the number of domestic trunk airlines has declined from thirty-eight to the current low of ten carriers. Thus merger activity is not a new development in this industry; however, most of the previously approved mergers were considerably smaller than those recently proposed by airline management. The impetus for the proposed airline mergers appears to center around the declining profits (or substantial losses) recorded by some carriers during the 1969-1970 recession period. While there are alternative solutions, the traditional merger approach has generated some managerial support which has been reinforced by the approval of the Department of Transportation.²

The purpose of this study is to determine if there is an empirical and logical basis for support of airline combinations and to explore other viable alternatives available to firms in this highly concentrated industry. Since approved mergers would increase the scale of existing carriers, primary emphasis will focus on the size-profitability hypothesis as it relates to this particular industry during the past decade.

II. SIZE AND PROFITABILITY

The suggestion that mere *size* influences profitability has long intrigued economists, as evidenced by the periodic and increasing number of studies of the subject.³ There has been a lack of consensus among researchers on the validity of the size-profitability

² The Department of Transportation approved the application of American Airlines and Western Airlines to merge. The Department of Justice opposed the merger on anticompetitive grounds and the CAB rejected the application in 1972.

³ W. BAUMAL, *BUSINESS, BEHAVIOR, VALUE, AND GROWTH* (1959); N. COLLINS & L. PRESTON, *CONCENTRATION AND PRICE-COST MARGINS IN MANUFACTURING* (1968); W. CRUM, *CORPORATE SIZE AND EARNING POWER* (1939); R. EPSTEIN, *INDUSTRIAL PROFITS IN THE UNITED STATES* (1939); H. STEKLER, *PROFITABILITY AND SIZE OF FIRM* (1963); Alexander, *The Effect of Size of Manufacturing Corporation on the Distribution of the Rate of Return*, 20 *REV. OF ECON. & STATISTICS* 229-35 (1949); Hall & Weiss, *Firm Size and Profitability*, 49 *REV. OF ECON. & STATISTICS* 319-31 (1967); Marcus, *Profitability and Size of Firm*, 51 *REV. OF ECON. & STATISTICS* 104-07 (1969); McConnel, *Corporate Earnings by Size of Firm*, 25 *SURVEY OF CURRENT BUS.* 6-12 (1945).

hypothesis. It appears that the level of industry aggregation, time period, number of firms, and other factors have contributed to the mixed results. In addition, primary emphasis has centered on the unregulated industrial areas where the quality of data is more serendipitous and diversification more prevalent than in regulated sectors of the economy. Thus an examination of the size-profitability hypothesis in the domestic trunk airlines industry has the advantage of data accessibility and homogeneity with results more germane than those of the generalized industrial studies. The following study presents an analysis of the effects of airline firm size on such parameters as profit, expenses and other measures of efficiency.

III. A TEST OF THE SIZE-PROFITABILITY HYPOTHESIS AS APPLIED TO THE AIRLINES

The domestic trunk airlines industry is highly concentrated with the four largest firms controlling about 70 percent of the assets. This study examines these four firms and the other seven carriers that were operating in the eleven year period, 1960-1970.⁴ For purposes of analysis, the smaller firms are divided into two groups, the medium four and the small three.⁵

In order to obtain a measure by which profit, revenue, and expenses can be evaluated as a function of size, the operational parameters are expressed on a per unit basis—the unit being a “revenue ton-mile.”⁶ This unit is preferable to “available ton-miles” because it measures actual rather than potential airline performance. In order to determine the effect of size on each parameter, regression equations have been computed which are mathematical models of the relationship between size and each parameter.⁷ These regression equations describe the relationship of size to a parameter (see Table 1); size is measured either as

⁴ The domestic trunk airlines listed according to size are: United, American, TWA, Eastern, Delta, Northwest, National, Western, Braniff, Continental, and Northeast.

⁵ Based on 1960-1970 operating revenue, the large airlines (1-4) held 68.2 percent of the market while the medium-sized firms (5-8) held 22.2 percent, and the smaller firms (9-11) had the remaining 9.6 percent. Statistics were compiled using data published by the Civil Aeronautics Board and MOODY'S *HANDBOOK OF COMMON STOCKS*.

⁶ A revenue ton-mile is a ton of cargo carried a mile.

⁷ The size data were transformed into natural logarithms.

operating revenue or total assets. Both size parameters reveal similar trends, therefore the graphs and the table utilize operating revenue and a table in the Appendix utilizes total assets. Two regression equations were computed for each parameter, first order and second order (logarithmic). First order equations are of the form $Y=B_0+B_1(L_nX)$ when Y is the magnitude of the specific parameter and X is airline size. Second order equations are of the form $Y=B_0+B_1(L_nX)+B_2(L_nX)^2$. The higher coefficient of determination (R^2) indicates the equation (first or second order) which is the better model for each parameter. Figures 1 and 2 are graphs of the better models.

A. *Size and Profitability*

An examination of the data presented in Table 1 and Figures 1 and 2 reveals that increasing the size of an airline firm beyond the point of minimum unit operating expense does not result in increased profitability. If the firm's size is already at or beyond the point of maximum unit profit, reductions in unit operating expense do not result in increased unit profit because unit revenue resulting from growth decreases at a greater rate than unit expenses. Total profitability also decreases with any substantial growth beyond the point of maximum unit profit because unit operating profit decreases faster than *size* increases, whether size is measured by operating revenue, revenue ton-miles, or total assets.

B. *Size and Cost*

One would expect the unit operating expense curve to decrease with size if benefits due to large size exist in the industry. Unit costs should move downward if stage length (length of flight from takeoff to landing) increases, as is the case for the large airlines.⁸ Nevertheless, this phenomenon has *not* been revealed in this study. The data underlying Figure 1 illustrate that unit operating expense is lowest for a range between the 1960-1970 mean size of the medium group of carriers and the four largest airlines firms. In relation to current firm size, this minimum point is slightly above the 1969-70 mean size of the medium four airlines.⁹

⁸ The mean stage length of the large four airlines is 536 miles, the medium four airlines is 402 miles, and the small three airlines is 385 miles (during the period 1960-1970).

⁹ Mean size (operating revenue) of the three airline groups during the period 1960-1970 was: large four— 7.0×10^8 , medium four— 2.3×10^8 , and the small three—

A breakdown of unit operating expenses reveals that six of the seven individual unit expense curves have the same shape as the unit operating expense curve.¹⁰ Only the depreciation and amortization curve goes down as size increases. Therefore, no one individual expense controls the shape of the overall unit operating expense curve. The analysis indicates that the large airlines do *not* operate as efficiently as the smaller airlines and that the expected benefits of size have not been attained in the domestic trunk airline industry in the decade of 1960-1970.

C. *Further Analysis*

Load factor (percentage of capacity utilized) is critical to the profitability and unit cost measures of airline performance. The increased costs incurred in handling a higher load factor are almost negligible because fixed costs per flight far exceed variable costs; however, an increased load factor causes unit operating revenue to increase faster than unit costs, contributing to increased profitability. During this study period, load factor and profitability (NI/TA) reached maximum values at the same airline size, demonstrating that the larger airlines are unable to fill their flights as well as the medium-sized airlines. Thus the size-load factor relationship is a partial explanation for the existence of diseconomies of scale of the large airlines.

Another way of evaluating a firm's relative success is to adopt the point of view of the stockholders, particularly those who invest for long-term gain. Earnings per share of the airlines follow a curve similar to that of profitability (see Figure 2). Both curves attain a maximum point well below the current mean size of the largest airlines. This finding strongly suggests that the proposed mergers involving any of the large airlines do not appear to be in the best interests of the public and the airlines and their shareholders.

IV. REGULATORY IMPLICATIONS

The public policy implications of this research clearly indicate

1.3×10^8 . During the period 1969-70 the mean size was: large four— 11.5×10^8 , medium four— 3.8×10^8 , and the small three— 2.4×10^8 .

¹⁰ The seven individual unit operating expenses are: flying operations, maintenance, passenger service, aircraft and traffic servicing, promotion and sales, general and administrative, and amortization and depreciation.

that the merger alternative is a suboptimal solution to the problems confronting the domestic trunk airlines industry. There are other alternatives which should be explored and encouraged. Price competition designed to increase load factors for the industry (as well as the individual firms) and deconcentration policies that would reduce the largest firms to a more efficient and profitable scale of operation should be considered.

A. *The Load Factor and Price and Nonprice Competition*

In addition to entry and mergers, the CAB regulates prices and some services.¹¹ This regulatory agency apparently favors a target-return pricing which contributes to a reduction in load factors in periods of declining business. As noted in *Fortune*, "CAB decisions have encouraged airline executives in a mistaken policy of seeking higher fares when business falls off in order to keep returns up—instead of cutting fares to attract new customers."¹² Richard E. Caves recognized this regulatory problem; he stated:

. . . regulation that aims at normal profits implies a movement of prices counter to the business cycle and counter to most other prices in the economy. Meaningless shifts of relative prices would occur—shifts that might draw too many resources into the regulated industry in time of prosperity only to force the regulatory authority to raise prices to guarantee a normal reward in time of recession.¹³

As load factors and profits declined during the last recession, the airlines clamored for higher fares. Starting in early 1969, the CAB granted several increases. Since then, air fares have increased about 15 percent and load factors have declined. The fare increases were in part a consequence of underutilized capacity and at the same time a cause of lower utilization. *Fortune* has noted

¹¹ In approving the fare increase, the Board, for the first time, established a standard for equipment utilization. Major airlines are now expected to fill at least 52.5 percent of their seats on an *industry wide* average, and the figure will rise to 55 percent in 1973. Thus, a new regulatory twist has been instituted *sans* competitive pricing.

¹² *FORTUNE*, July, 1971, at 145. It is worth noting that international fares, which have displayed a downward movement (and increased load factors) are not under the CAB's control.

¹³ Caves, *Performance, Structure, and the Goals of Civil Aeronautics Board Regulation*, in *THE CRISIS OF THE REGULATORY COMMISSION* 148 (P. MacAvoy ed. 1970). For a more complete discussion of the problems of airline regulation see R. CAVES, *AIR TRANSPORT AND ITS REGULATORS: AN INDUSTRY STUDY* (1962).

that "After so many years of anticompetitive regulation, not many airline executives tend to think in terms of trying to attract additional customers with lower fares."¹⁴

In conclusion, it appears that increased pricing freedom coupled with a restrictive merger policy by the CAB is the most beneficial course for both private and public interests. Target rates of return should be abolished in pricing and service decisions in the interest of all concerned. Richard E. Caves, in a prophetic and perceptive observation, stated:

The variety of services offered to travelers can be improved somewhat if the Board allows the carriers more freedom to experiment, but the Board's ultimate fear of subnormal profits will remain. The number of carriers may continue to shrink, even if profits for the industry as a whole average better than normal, unless the Board sees the long-run danger in mergers.¹⁵

The evidence rather strongly suggests that the regulatory course in this industry should be a strict policy regarding merger activity and a more relaxed policy on pricing practices designed to increase the load factor.

B. Airline Deconcentration

Rather than encouraging a higher level of concentration in the domestic airlines industry, a program of periodic and orderly spin-offs of components of the larger firms appears to be in the interests of the airlines as well as the public. Proposals of this type generally are greeted with minimum enthusiasm, yet the fact remains that diseconomies of scale are as real and as possible to attain as economies of scale.¹⁶ This factor appears to have become obscured

¹⁴ See note 12 *supra* at 146. In the absence of price competition, most of the firm rivalry has been of the nonprice variety as noted by Alfred E. Kahn: "In part because the doors to price competition are closed, airline companies compete very strenuously among themselves in the quality of service they offer—most notably in adopting the most modern and attractive equipment and in the frequency with which they schedule flights, but also in providing comfort, attractive hostesses, in-flight entertainment, food and drink." Kahn, *The Economics of Regulation: Principles and Institutions*, 2 INSTITUTIONAL ISSUES 211 (1971). As noted by Kahn, the expenses in the latter category alone are not negligible, since it is reported that an airline spends more than \$30 for food and drink for each transatlantic first-class passenger.

¹⁵ Caves, *Performance, Structure, and the Goals of Civil Aeronautics Board Regulation*, in *THE CRISIS OF THE REGULATORY COMMISSION* 149 (P. MacAvoy ed. 1970).

¹⁶ Some belated recognition of this factor is evident in the announcement by

in the rhetoric surrounding the discussions of relative firm size in all segments of the economy.

V. SUMMARY

In the past few years, several of the domestic trunk airlines have proposed mergers as the solution for their declining profits (or losses). A study of the historical performances of the industry during the 1960-70 period reveals that as the size of an airline increases beyond that of the medium four airlines, profitability decreases. This finding indicates that increases in firm size resulting from mergers are a suboptimal solution to the airlines profits problems. In this industry, variable cost is small compared to fixed costs; therefore, the most logical solution to declining profits is price competition aimed at increasing industry and individual airline load factor, resulting in increased profits. In addition, regulators and managers of the large airlines should consider spin-offs designed to achieve a firm size more compatible with increased efficiency and profitability.

United States, the largest firm in the industry, that it is drastically decentralizing decision-making and operating responsibility. Three operating divisions have been established—each of which by itself would rank in size among the top half dozen or so airlines. The president of the firm listed the following advantages of the decentralization: shorter lines of authority, greater field autonomy, increased stress on the profit center concept and cost control. *See Wall Street Journal*, Oct. 1, 1971, at 6. Deconcentration is a step beyond decentralization since independence is also achieved in addition to the other benefits.

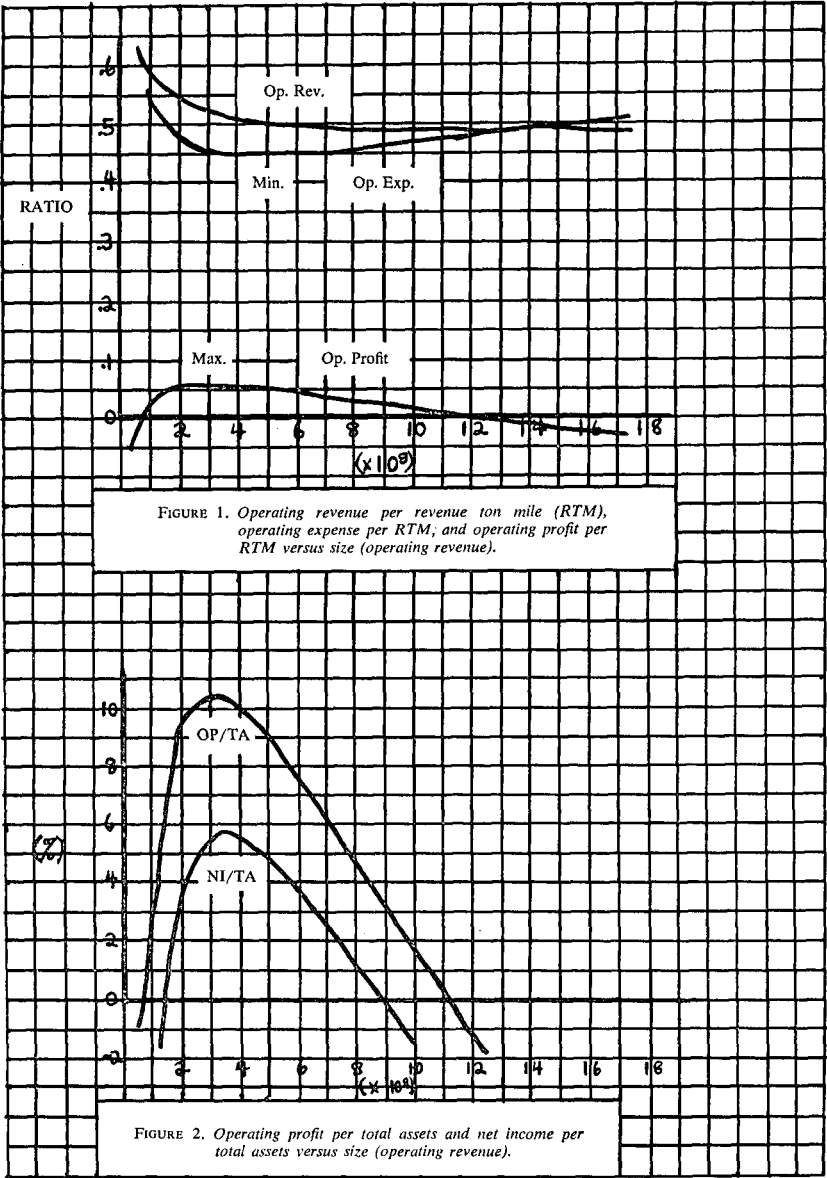
TABLE I (continued)

Promotion & Sales/RTM	2.14 (4.25)	-2.08*10 ⁻¹ (-3.98)	5.18*10 ⁻³ (3.84)	.282	2.09*10 ⁻¹ (7.91)	-7.55*10 ⁻³ (-5.54)	.199
General & Admin./RTM	6.64*10 ⁻¹ (2.76)	-6.43*10 ⁻² (-2.58)	1.60*10 ⁻³ (2.48)	.138	6.80*10 ⁻² (5.57)	-2.40*10 ⁻³ (-3.80)	.101
Depreciation & Amortization/RTM	9.69*10 ⁻¹ (1.19)	-8.93*10 ⁻² (-1.06)	2.18*10 ⁻³ (1.00)	.044	1.59*10 ⁻¹ (3.94)	-5.31*10 ⁻³ (-2.55)	.044
Load Factor	-518. (-2.78)	57.6 (2.98)	-1.46 (-2.92)	.087	26.0 (2.72)	1.06 (2.16)	.029
PROFITABILITY PARAMETERS							
OPERATING PROFIT							
Total Assets	-24.1 (-5.82)	2.47 (5.77)	-6.33*10 ⁻² (-5.71)	.242	-5.13*10 ⁻¹ (-2.22)	2.93*10 ⁻² (2.46)	.040
NET INCOME							
Total Assets	-25.0 (-5.63)	2.54 (5.53)	-6.46*10 ⁻² (-5.44)	.268	-8.85*10 ⁻¹ (-3.61)	4.61*10 ⁻² (3.64)	.092
OPERATING PROFIT							
Operating Revenue	-18.8 (-5.46)	1.94 (5.44)	-4.99*10 ⁻² (-5.39)	.204	-2.54*10 ⁻¹ (-1.34)	1.71*10 ⁻² (1.74)	.016
NET INCOME							
Operating Revenue	-15.6 (-6.02)	1.60 (5.95)	-4.08*10 ⁻² (-5.86)	.277	-4.50*10 ⁻¹ (-3.09)	2.46*10 ⁻² (3.27)	.075
Earnings per Share	-285. (-3.98)	28.8 (3.87)	-7.21*10 ⁻¹ (-3.75)	.231	-16.75 (-4.47)	9.02*10 ⁻¹ (4.66)	.147

APPENDIX TABLE

Regression coefficients (B 's) with respective t -ratios and correlation coefficients (R^2) for first and second order equations. First order equations are in the form $Y=B_0+B_1\ln(X)$ and second order equations are in the form of $Y=B_0+B_1\ln(X)+B_2[\ln(X)]^2$ where Y is an operational or profitability parameter and X is the airline size (total assets).

	Second Order Equations			First Order Equations		
	B_0 (t -ratio)	B_1 (t -ratio)	B_2 (t -ratio)	B_0 (t -ratio)	B_1 (t -ratio)	R^2
OPERATIONAL PARAMETERS						
Operating Profit/RTM	-6.47 (-6.32)	$6.68*10^{-1}$ (6.26)	$-1.71*10^{-2}$ (-6.17)	$-1.75*10^{-1}$ (-2.01)	$1.10*10^{-3}$ (2.46)	.040
Operating Revenue/RTM	2.57 (1.90)	$-1.63*10^{-1}$ (-1.16)	$3.02*10^{-3}$ (0.83)	1.45 (14.55)	$-4.67*10^{-2}$ (-9.13)	.407
Operating Expense/RTM	9.04 (5.00)	$-8.31*10^{-1}$ (-4.41)	$2.01*10^{-2}$ (4.11)	1.63 (11.4)	$-5.76*10^{-2}$ (-7.88)	.337
Load Factor	-235. (-2.22)	28.4 (2.57)	$-7.14*10^{-1}$ (-2.48)	27.0 (3.36)	1.00 (2.43)	.040
PROFITABILITY PARAMETERS						
OPERATING PROFIT						
Total Assets	-17.3 (-8.36)	1.77 (8.24)	$-4.52*10^{-2}$ (-8.08)	$-6.24*10^{-1}$ (-3.28)	$3.48*10^{-1}$ (3.57)	.089
NET INCOME						
Total Assets	-19.4 (-9.37)	1.97 (9.14)	$-4.98*10^{-2}$ (-8.90)	-1.02 (-5.19)	$5.28*10^{-2}$ (2.23)	.180
OPERATING PROFIT						
Operating Revenue	-11.1 (-5.83)	1.14 (5.77)	$-2.92*10^{-2}$ (-5.67)	$-3.31*10^{-1}$ (-2.08)	$2.09*10^{-2}$ (2.57)	.045
NET INCOME						
Operating Revenue	-9.51 (-6.87)	$9.67*10^{-1}$ (6.70)	$-2.44*10^{-2}$ (-6.52)	$-5.07*10^{-1}$ (-4.25)	$2.73*10^{-2}$ (4.47)	.137
Earnings Per Share	-176. (-4.52)	17.6 (4.32)	$-4.34*10^{-1}$ (-4.11)	-16.3 (-5.29)	$8.72*10^{-1}$ (5.53)	.197



AIRLINE CAPACITY AGREEMENTS CORRECTING A REGULATORY IMPERFECTION†

William A. Jordan*

In this article Professor William Jordan presents a convincing argument that airlines can charge lower fares and still increase profits by reducing flight frequencies. To accomplish this result he urges CAB support for capacity agreements between airlines. His analysis includes a review of previous capacity agreements, an examination of the actual effects of these agreements and finally predictions based on the future application of capacity agreements.

EXCESS capacity has become a chronic affliction of the regulated interstate airlines of the United States. The revenue passenger load factors of the domestic trunk airlines have gradually fallen from between 80 to 90 percent during World War II, down through the 70 to 60 percent range during the 1950's, and on to the 50 percent level during the late 1960's.¹ Superimposed on this secular trend has been a cyclical fluctuation which has yielded lower than usual load factors during the late 1940's, the early 1960's, and most recently, in 1969-71 when passenger load factors fell below 50 percent—even while aircraft were being operated with large lounges and relatively low seating densities.² Whether one looks upon this situation as an optimist and says

† A preliminary version of this article was presented on September 22, 1972, at the Federal Bar Association Conference, Air Transport Regulation. The research was conducted under a grant from the York University Transport Centre. Neither organization, of course, is responsible for the contents of this article.

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¹ CAB, HANDBOOK OF AIRLINE STATISTICS 26 (1971 ed.).

² *Id.* See also CAB, AIR CARRIER TRAFFIC STATISTICS, XVII-12, at 2 (1971); CAB Order No. 72-5-101, at 7-37 (May 26, 1972). In 1971 the trunk carriers' load factor reached an all time low of 48.3 percent.

that the aircraft were almost half full, or as a pessimist who points out that they were more than half empty, the fact is that a great deal of the trunk carriers' production has not been utilized. As a result, the cost of the air transportation services actually consumed has been substantially increased.

No one will argue that the airlines are incapable of achieving higher than 50 percent passenger load factors. Indeed, the Civil Aeronautics Board (CAB) has set a "long-range passenger load factor standard" of 55.0 percent for the trunk carriers,³ and many would agree that the 60 to 65 percent load factors of the late 1950's provided high quality passenger service in addition to a more efficient utilization of airline resources. Unfortunately, while it is easy to agree on the desirability of higher load factors, it is very difficult to achieve them.

The airlines are painfully aware of the effects of excess capacity on their profits. In addition, the CAB, Federal Aviation Administration (FAA), operators of large metropolitan airports, and others have come to recognize that the combination of substantial traffic growth and decreased load factors wastes resources, increases pollution, and promotes congestion in airway and airport facilities. As a result, a new phenomenon—the airline capacity agreement—has been slowly developing in the United States since 1968. Operationally, these agreements have come into existence when the airlines serving some airport or operating between certain cities have requested and received CAB authorization to discuss schedule frequencies free of antitrust constraints. When such discussions are successful, and the resulting agreements are approved by the CAB, a reduced number of schedules are allocated among and operated by the participating carriers, thereby reducing excess capacity.

The purposes of this article are to outline the major reason for the airlines' chronic excess capacity; describe the development of capacity agreements in the U.S. largely in response to this excess capacity; provide evidence regarding the effects of various agreements; and predict the likely long-run results of the widespread implementation of capacity agreements. Hopefully this will provide interested readers with a better understanding of this important innovation, will help decision makers avoid certain pitfalls asso-

³ CAB Order No. 71-4-54, at 45 (April 9, 1971).

ciated with the various kinds of capacity agreements, and will indicate what can realistically be expected from such agreements.

I. THE SOURCE OF EXCESS CAPACITY

Excess capacity among the regulated airlines is largely due to a fundamental imperfection in the CAB's regulatory practices. The Civil Aeronautics Act of 1938⁴ gave the CAB full discretionary power over airline entry/exit and prices, but only limited power over the quality of service provided by the airlines.⁵ During the past 35 years the Board has exercised strict regulation of airline pricing so that all the airlines have charged essentially the same prices for comparable services.⁶ The Board *could* have adopted similar strict policies to limit the number of carriers allowed to serve each route. For example, it could have allocated routes among the trunk carriers so that, with a few exceptions, only one carrier would have been authorized to provide the desired service between each city pair. If this had been done, and if carriers had been selected on the basis of which one was capable of providing the optimal type and amount of service at the lowest marginal cost, industry profits could have been maximized and then allocated among all the regulated airlines. It happened, however, that the Board did not do this. Instead, it has allowed several carriers to operate between most of the larger cities, with each carrier's profits being substantially influenced by the share of total traffic it could attract in each city pair, rather than by total industry profits. Since CAB regulation has essentially controlled prices but not service quality, the airlines have turned to service-quality rivalry as the means of winning traffic from each other, and this is the source of the excess capacity problem.⁷

Large-scale service-quality rivalry has resulted in the airlines utilizing increased amounts of capital and labor inputs to produce given amounts of ever higher quality output. Some of the results and costs of service-quality rivalry can be seen in in-flight meal services and entertainment, large aircraft lounges, increased leg

⁴ 52 Stat. 973.

⁵ W. JORDAN, AIRLINE REGULATION IN AMERICA: EFFECTS AND IMPERFECTIONS 2-4 (1970).

⁶ *Id.* at 57-72.

⁷ *Id.* at 228-33.

room, downtown ticket offices, fast baggage handling, comfortable terminal facilities, and so forth, that have become accepted features of air transportation. More importantly, service-quality rivalry has played a fundamental role in increasing schedule frequency⁸ (and thus the number of aircraft operated by the carriers), and in causing the frequent reequipment cycles which introduced pressurized, piston-powered aircraft from 1946 to 1952, jet aircraft starting in 1958, and wide-bodied aircraft beginning in 1970.⁹

A simple illustration will be useful in providing some idea of the resources represented by the current fleet of trunk carrier aircraft and, from this, an indication of the costs incurred when an excessive number of these aircraft are purchased, underutilized and then retired before the end of their economically useful lives. Consider a somewhat above-average North American suburban house priced at \$50,000. This house can provide comfortable accommodations for five persons, two cars and assorted pets for at least 30 years (the length of the mortgage) and probably for 50 years or more. It would take about 380 of these houses to equal the value of a DC-10 (about \$19 million), and around 500 houses would account for one Boeing 747 (priced around \$25 million). Consider further that as of September 30, 1972, the total original (nondepreciated) value of all flight equipment operated by the domestic trunk carriers was \$9.383 billion,¹⁰ equivalent in value to 187,660 of our above-average suburban houses. Now, a 25 percent increase in passenger load factor (from, say, 52 percent to 65 percent) would allow the same number of passengers to be accommodated by a 20 percent smaller trunk aircraft fleet. This would mean a reduction in the value of the required stock of aircraft by \$1.877 billion (to \$7.506 billion), equivalent to about 37,500 houses, capable of accommodating 187,500 persons.

Another long-term reduction in resource requirements could be

⁸ See, e.g., CAB Order No. 71-4-54, at 5 (April 9, 1971).

⁹ The rapid and extensive adoption of these first two aircraft innovations under regulation is summarized in W. JORDAN, *AIRLINE REGULATION IN AMERICA: EFFECTS AND IMPERFECTIONS* 36-44 (1970).

¹⁰ CAB, *AIR CARRIER FINANCIAL STATISTICS*, XX-3, at 32 (1972). Note that inflation serves to decrease the original value relative to full replacement value of the current aircraft stock. Thus, the following example somewhat understates the impact on the economy of excess aircraft capacity.

achieved by extending the useful lives of aircraft by 25 percent (say, from an average of 14 years to $17\frac{1}{2}$ years). Had both the load factor increase and longer aircraft lives been in effect since jet aircraft were introduced in late 1958, the current average annual rate of replacement outlays to maintain the smaller stock of aircraft would be reduced from \$670 million ($\$9.383 \text{ billion} \div 14$) to \$429 million ($\$7.506 \div 17.5$)—that is, by about \$241 million per year. This would release resources that could be used to build 4,820 houses each year, providing better housing for 24,100 persons. Cumulating this flow of construction over a $17\frac{1}{2}$ -year aircraft replacement cycle yields an increase in the stock of housing by 84,350 units, while over a 50-year house replacement cycle the housing stock would be increased by 241,000 units. This would mean better housing for about 422,000 upper-middle class persons over the $17\frac{1}{2}$ -year period, and 1.2 million persons for the 50-year period. Furthermore, many more than 1.2 million persons would have better housing as less affluent individuals in turn move into better housing as it is vacated by wealthier families moving into the new houses.

Obviously, the above illustration is unrealistic in that resources made available by reducing the number of aircraft produced would not all be funneled into middle-class housing. Instead, they would be utilized in many diverse parts of the economy. But, this simple illustration does indicate that two quite feasible changes in aircraft utilization would have important effects on overall resource allocation and production in the economy. Finally, keep in mind that the above illustration merely refers to resources diverted from aircraft construction. It does not include the resources required to maintain and operate these additional aircraft.

Clearly, an institutional environment that encourages the excessive purchase, underutilization and early retirement of such a valuable asset as aircraft greatly increases the costs of airline production. Yet this is precisely the result of the service-quality rivalry that has developed in the CAB regulatory environment, and it is the undesirable results of this situation that airline capacity agreements have been mainly designed to change, given the existing reluctance to change the fundamental regulatory source of excess capacity.¹¹

¹¹ The following quotation shows the emphasis which the airlines place on

II. DEVELOPMENT OF CAPACITY AGREEMENTS

As indicated above, a necessary condition for capacity agreements is for the Board first to give two or more carriers permission to meet to discuss flight schedules, and then to approve any resulting agreements under section 412 of the Act.¹² Given these explicit Board authorizations, section 414 of the Act¹³ exempts these cartelizing actions of the airlines from the provisions of the "antitrust laws" and, therefore, makes the agreements legally enforceable.¹⁴ Clearly, if these agreements serve to reduce the total number of flight schedules or available seat-miles operated by the parties and to allocate the agreed upon total among the carriers, an important aspect of service-quality rivalry is removed from independent carrier action and is relegated to the rivalry of the negotiating table.

A. *Agreements Concerning Airports*

The earliest capacity agreements concerned flight frequencies at specific airports. On July 24, 1968, TWA requested permission from the CAB for the airlines to hold discussions regarding air traffic congestion at Chicago, Los Angeles, New York and Washington, D.C.¹⁵ The CAB authorized these discussions just two days following TWA's request,¹⁶ and about three weeks later the FAA gave direction to these discussions by proposing an amendment to the Federal Aviation Regulations which would set restrictions on

modernizing their aircraft fleets: "In a recent McGraw-Hill study of the nation's plant and equipment, the airlines emerged as the most modern of all industries surveyed. Airlines were found to have the largest share of plant and equipment less than five years old (60 per cent), the smallest percentage of technologically outmoded plant and equipment (1 per cent), and the largest share of 1972 capital spending budgets going for electronic equipment (88 per cent)." Newsletter to the Stockholders of UAL, Inc., from Edward E. Carlson, at 2 (April 26, 1973). Given the above analysis, it is not clear that this is a desirable situation for a significant portion of the U.S. population.

¹² Federal Aviation Act of 1958, § 412, 49 U.S.C. § 1382 (1970).

¹³ 49 U.S.C. § 1384.

¹⁴ CAB Order No. 70-11-35, at 2n. (November 6, 1970). A cartel is defined as a group of producers who form an agreement to act together. See G. STIGLER, *THE THEORY OF PRICE* 230 (1966). The specific provision to exempt airline agreements from the antitrust laws shows that Congress was aware that such agreements do facilitate cartel actions, but that, in common with labor unions, farmer marketing organizations, etc., they are deemed desirable in some significant sense.

¹⁵ CAB Press Release No. 68-81 (July 26, 1968).

¹⁶ CAB Order No. 68-7-138 (July 26, 1968).

maximum hourly aircraft movements at the John F. Kennedy, LaGuardia and Newark airports (in the New York area), at the Chicago-O'Hare International Airport, and at the Washington National Airport.¹⁷ Using the CAB's authority to discuss the airport congestion problem, the airlines proposed allocating the FAA's quotas through scheduling committees comprised of all U.S. and foreign carriers serving the five airports, and on December 3, 1968, the CAB approved the three airline agreements that established the scheduling committees for the three geographic areas.¹⁸ It took the airlines until the end of March 1969 to reach agreement on the actual allocations of the FAA's quotas, and these allocations went into effect on June 1, 1969.¹⁹ There have been some adjustments in the FAA quotas, and they have been suspended at Newark and partially suspended at John F. Kennedy, but as this is being written, they are still in effect and the most recent CAB order approving the existence of the airline scheduling committees extends through October 24, 1973.²⁰ Overall, there seems to be every reason to expect that these committees will continue to be authorized and to function for the indefinite future. In fact, the last three Board orders authorizing their continuation were issued by the Board's staff under delegated authority, indicating a routinization of this matter.²¹

This general type of capacity agreement which allocates flight frequencies at specific airports (or over the airways in general) has been used in three other situations. First, it was used in April 1970 to reduce schedules nationwide during the FAA air traffic controllers' "sick-out."²² Second, it has been used at various times since April 1970 to allow carriers serving the Chicago-O'Hare

¹⁷ The Wall Street Journal, Aug. 19, 1968, at 3 (Midwest ed.); The Wall Street Journal, Sept. 5, 1968, at 2 (Midwest ed.).

¹⁸ CAB Order No. 68-12-11 (December 3, 1968); FAA Amendment No. 93-13 to the Federal Aviation Regulations, 33 FED. REG. 17896 (1968).

¹⁹ 34 FED. REG. 2603 (1969); *AV. WEEK & SPACE TECHNOLOGY*, Mar. 3, 1969, at 22; *AV. WEEK & SPACE TECHNOLOGY*, Mar. 31, 1969, at 26. Among other things, a 31-day meeting was held in Washington in the course of hammering out the agreements.

²⁰ CAB Orders Nos. 69-7-99 (July 18, 1969), 70-3-140 (March 27, 1970), 70-11-112 (November 23, 1970), 71-10-23 (October 6, 1971), 72-11-72 (November 16, 1972).

²¹ CAB Orders Nos. 70-11-112 (November 23, 1970), 71-10-23 (October 6, 1971), 72-11-72 (November 16, 1972).

²² CAB Orders Nos. 70-4-5, at 3 (April 2, 1970), 70-4-52 (April 10, 1970).

International Airport to discuss specific flights to be transferred from O'Hare to Midway airport in order to provide service improvements at Midway.²³ Finally, starting in January 1971, all U.S. and foreign carriers utilizing the International Arrivals Building at John F. Kennedy Airport have been allowed to hold discussions and enter into joint arrangements to limit the number of passengers arriving at this building to no more than 2,500 per hour during the summer months in order to reduce congestion in customs clearance.²⁴

B. *Agreements Concerning City Pairs*

1. *Hawaiian.*

The development of capacity agreements concerning individual city pairs began in April 1970 with the start of the *Hawaiian Service Investigation*. In its order instituting this case the Board noted that "it may well be that voluntary action on the part of the carriers to tailor their schedules more closely to the available traffic volume would eliminate the problem of submarginal load factors, and with it the need for the present investigation."²⁵ Two months later, in his Initial Decision in this case, Examiner Shapiro recommended a halt to the "capacity war" and "urged that the carriers consult under Board sanction, which would provide immunity from anti-trust violations."²⁶ Just one month following this invitation, Aloha and Hawaiian requested and received permission to engage in scheduling discussions.²⁷ To date, the Board has approved two agreements by Aloha and Hawaiian to reduce flight frequencies in four major Hawaiian city pairs. The first agreement resulted in 1970-71 Fall/Winter schedules being reduced by about 30 percent from the Fall 1969 level.²⁸ The second agreement provided for Hawaiian to "decrease its proposed Fall 1971 schedules

²³ CAB Orders Nos. 70-4-40 (April 8, 1970), 70-7-123 (July 27, 1970), 70-10-94 (October 20, 1970), 72-10-85 (October 26, 1972), 73-4-79 (April 19, 1973).

²⁴ CAB Orders Nos. 71-1-55 (January 12, 1971), 72-1-39 (January 13, 1972), 72-12-54 (December 13, 1972).

²⁵ CAB Order No. 70-4-81 (April 16, 1970), as quoted in CAB Press Release No. 70-52 (April 24, 1970).

²⁶ *AV. WEEK & SPACE TECHNOLOGY*, June 29, 1970, at 33, reporting on Initial Decision in Doc. No. 20244 (June 22, 1970).

²⁷ CAB Order No. 70-7-120 (July 24, 1970).

²⁸ CAB Order No. 70-12-46, at 3 (December 8, 1970).

by four daily one-way flights . . . in one or more of the four major markets,” and for Aloha to add four daily flights in those city pairs.²⁹ Amendment 1 to the second agreement provided for the 1972 summer flight frequencies to equal those operated in 1971, but with Aloha increasing and Hawaiian decreasing frequencies by “28 weekly segment flights in the ‘four major markets’” so that Aloha would operate 43.1 percent of the total schedules and Hawaiian 56.9 percent.³⁰ The order approving this amendment also authorized Aloha and Hawaiian to engage in discussions regarding the implementation of the agreement, and specified that it would be effective through July 15, 1973.³¹

2. *Transcontinental.*

Another attempt was made in mid-1970 to implement a capacity agreement concerning specific city pairs. During August 1970 American, TWA, and United met privately and agreed to limit the nonstop available seat-miles that they would operate in 15 city pairs. It happened, however, that they failed to obtain CAB permission to hold their discussions and they did not provide for a Board observer to be present (a requirement of all CAB-authorized discussions). For these and other reasons, on November 6, 1970, the Board refused to approve their agreement.³²

The efforts of these carriers were not entirely wasted since, in its denial order, the Board noted the apparent failure of unilateral carrier decisions to resolve the over-capacity problem in the short-run, and it invited all carriers to apply for permission to conduct multicarrier discussions aimed at reducing “capacity in markets in which excess capacity is presently being operated.”³³ In response to this invitation, TWA applied for permission to meet with other

²⁹ CAB Order No. 71-8-58, at 1 (August 12, 1971). CAB Order No. 71-6-124 (June 24, 1971) gave permission to Aloha and Hawaiian to discuss schedules which resulted in this agreement.

³⁰ CAB Order No. 71-12-143, at 2 (December 30, 1971). This amendment also provided for increasing schedules in 1972 if necessary to maintain the combined load factor of 58.1 percent experienced during the summer of 1971, with Aloha operating the first 28 of any such additional flights, and both carriers sharing any schedule increases over 28 on a 50-50 basis.

³¹ *Id.* at 3. See also CAB Order No. 73-6-91 (June 22, 1973) which authorized discussions to extend or revise the agreement.

³² CAB Order No. 70-11-35 (November 6, 1970). Vice Chairman Gilliland dissented from this decision. See also CAB Order No. 70-9-42 (September 8, 1970).

³³ CAB Order No. 70-11-35, at 4 (November 6, 1970).

airlines to discuss capacity agreements, and on March 11, 1971, the Board authorized *all* certificated carriers "to conduct discussions to determine whether to request authority to discuss capacity reduction agreements in specific markets. . . ."³⁴ These discussions were held on March 22, 1971, and resulted in an application to the Board requesting approval for further discussions concerning the schedules in 18 city pairs. In mid-May the Board authorized such discussions for 13 of the 18 requested city pairs,³⁵ and, finally, after still more meetings American, TWA, and United filed an agreement in late June proposing a reduction in the number of weekly nonstop flights operated in four city pairs—New York/Newark-Los Angeles, New York/Newark-San Francisco, Chicago-San Francisco, and Washington/Baltimore-Los Angeles.³⁶ Their proposed reductions from the then actual schedule levels are summarized in Table No. 1. The CAB approved their agreement on August 19, 1971, thereby establishing what has come to be known as the "transcontinental capacity agreement."³⁷

TABLE NO. 1

ACTUAL AND PROPOSED NUMBER OF EQUIVALENT* ROUND-TRIP
NONSTOP FLIGHTS FOR THE TRANSCONTINENTAL CITY PAIRS
JUNE 1, 1971, AND OCTOBER 1, 1971 TO SEPTEMBER 16, 1972³⁸

City Pair	Total Weekly Round-Trip Nonstop Flights*				
	Actual as of June 1, 1971	10/1/71 to 5/31/72 Pro- posed No.	% Re- duction	6/1/72 to 9/16/72 Pro- posed No.	% Re- duction
NY-LA	185	132	28.9%	157	15.4%
NY-SF	143	89	38.0	121	15.7
CHI-SF	147	105	28.6	126	14.3
WASH-LA	73	66	10.2	69	6.1

* In terms of conventional jet flights. One wide-bodied jet flight was considered equivalent to two conventional jet flights.

The expressed aim of this agreement was to increase load factors in these city pairs from the first quarter 1971 levels of 26 to

³⁴ CAB Order No. 71-3-71, at 5 (March 11, 1971).

³⁵ CAB Order No. 71-5-68 (May 14, 1971).

³⁶ CAB Agreement No. 22496, Doc. No. 22908 (effective October 1, 1971), *Agreements Filed with the Civil Aeronautics Board Under Section 412(a) During the Week Ending June 24, 1971*, at 1.

³⁷ CAB Order No. 71-8-91 (August 19, 1971).

³⁸ *Id.* at 2.

36 percent, to an overall average of around 50 percent in the October-May period and up to 60 percent during the June-September 1972 peak period.³⁹ This goal was essentially achieved. During the first six months of the agreement the combined load factor for the four city pairs was 49.8 percent, and the first twelve months gave a combined load factor of 54.2 percent—implying a load factor for the second six months of about 59 percent.⁴⁰

Given this improved load factor performance, it is understandable why, on May 19, 1972, TWA petitioned the CAB for permission to undertake further discussions regarding scheduling in these four city pairs.⁴¹ This permission was granted on August 9, 1972,⁴² and the three carriers immediately filed an “amendatory agreement,” proposing a continuation of their existing agreement at the same capacity levels specified for the October 1, 1971 to May 31, 1972 off-peak period.⁴³ The Board approved this agreement for the period ending April 28, 1973, but in its order it stated that “the applicants should be on notice that no further extension of their capacity limitation agreement will be approved, absent a change in circumstances of extraordinary proportions.”⁴⁴

Apparently extraordinary changes did occur, because on April 24, 1973, the Board granted the three carriers permission to hold discussions regarding the extension of this agreement, saying, “it is the Board’s tentative view that, contrary to our earlier determination and as discussed above, such agreements properly consti-

³⁹ *Id.* at 1.

⁴⁰ Timm, member, concurring, at 8, CAB Order No. 72-11-6 (November 2, 1972); and CAB Order No. 73-4-98, app. A (April 24, 1973). Note that the capacity agreement was temporarily suspended during the last two weeks of the twelve month period. Appendix A also shows that departures were reduced 25.9 percent and seats reduced 25.4 percent during the period 10/1/71-9/30/72 as compared with the prior twelve months. The Board correctly points out that these results were with reduced seating configurations with lounges in wide-bodied aircraft and five-abreast coach seating in some conventional jets. CAB Order No. 72-8-42, at 2, n.7 (August 9, 1972).

⁴¹ The Wall Street Journal, May 22, 1972, at 13 (Pac. ed.).

⁴² CAB Order No. 72-8-42 (August 9, 1972). Members Minetti and Murphy dissented from this decision.

⁴³ CAB Agreement No. 22496-A1, Doc. No. 22908, *Agreements Filed with the Civil Aeronautics Board Under Section 412(a) During the Week Ending August 17, 1972*, at 1.

⁴⁴ CAB Order No. 72-11-6, at 6 (November 2, 1972). Members Minetti and Murphy dissented from this decision.

tute a useful regulatory tool that should not be discarded for theoretical reasons. In light of this revised position of the Board, carriers may wish to file applications for permission to discuss capacity agreements in other markets."⁴⁵ American, TWA, and United filed a new capacity agreement in late May 1973.⁴⁶ This agreement differed from the previous agreements in that it allocated capacity on the basis of the number of seats (rather than flights) to be operated.⁴⁷ As of the end of July 1973, the Board had yet to announce publicly its decision regarding this agreement.

3. *New York/Newark-San Juan.*

Another of the 13 city pairs where the Board's May 14, 1971, order allowed carriers to discuss schedule agreements was New York/Newark-San Juan. It happened, however, that American, Eastern, and Pan American were unable to reach an agreement until the following May,⁴⁸ after they had reportedly fought a "capacity war" allegedly started by American when it gained entry into this city pair by merging with Trans Caribbean in March 1971.⁴⁹ Table No. 2 summarizes the allocation of equivalent round-trip flights specified in this agreement. The CAB approved the agreement on June 16, 1972, and mentioned in particular that it would help maintain the low yield in this city pair (4.11c per mile vs. 6.01c for overall domestic traffic) which the Board felt was

⁴⁵ CAB Order No. 73-4-98, at 4 (April 24, 1973). Footnote 8 of this order amplified this statement as follows: "If the carriers do not come forward with additional applications for capacity discussions, the Board may, in the discharge of its regulatory responsibilities, suggest those markets where capacity agreements would be warranted." Members Minetti and Murphy concurred with the result, but not with the "speaking portion" of this order. There was a significant change in Board membership between November 1972 and April 1973. Chairman Secor D. Browne resigned and Robert D. Timm became chairman on March 1, 1973. This left the Board with only four members during this period.

⁴⁶ CAB Agreement No. 23703, Doc. No. 22908, *Agreements Filed with the Civil Aeronautics Board Under Section 412(a) During the Week Ending May 24, 1973*, at 1.

⁴⁷ AV. WEEK & SPACE TECHNOLOGY, June 4, 1973, at 36.

⁴⁸ CAB Agreement No. 23055, Doc. No. 22908, *Agreements Filed with the Civil Aeronautics Board Under Section 412(a) During the Week Ending May 11, 1972*, at 1. The CAB authorized the specific discussions resulting in this agreement in Orders Nos. 72-1-86 (January 25, 1972), 72-4-127 (April 24, 1972). Members Minetti and Murphy dissented from these decisions.

⁴⁹ AV. WEEK & SPACE TECHNOLOGY, Jan. 10, 1972, at 29-30. See also CAB, AIR CARRIER FINANCIAL STATISTICS, XX-3, at 30 (1972).

particularly important due to Puerto Rico's "unique dependence on air transportation."⁵⁰

TABLE NO. 2

PROPOSED NUMBER OF EQUIVALENT* ROUND-TRIP NONSTOP FLIGHTS
TO BE OPERATED BY AMERICAN, EASTERN, AND PAN AMERICAN
BETWEEN NEW YORK/NEWARK AND SAN JUAN
AUGUST 1 TO OCTOBER 28, 1972⁵¹

Carrier	Total Weekly Round-Trip Nonstop Flights*			
	Peak Period		Off-Peak Period	
	(8/1/72 to 9/9/72)		(9/10/72 to 10/28/72)	
	Number	% of Total	Number	% of Total
American	77.6	35%	52.5	35%
Eastern	82.0	37	55.4	37
Pan American	62.0	28	42.0	28
Total	<u>221.6</u>	<u>100</u>	<u>149.9</u>	<u>100</u>

* In terms of conventional jet flights. The following weights were used to convert flights operated with other aircraft into conventional jet flights:

B-727-100 = 0.8

DC-8 Series 60 = 1.4

B-727-200 = 0.9

DC-10/L-1011 = 1.7

B-707/DC-8 = 1.0 (conventional)

B-747 = 2.5

The aim of the three carriers was to achieve a 75 percent load factor during the peak period and a 65 percent load factor for the off-peak period.⁵² As in the case of the transcontinental capacity agreement, this goal was quickly achieved. The combined load factor in this city pair was 74 percent in August and 66 percent in September 1972 (compared with 60 percent and 50 percent for these two months in 1971).⁵³ Not surprisingly, Pan American applied for authorization to engage in discussions to extend the agreement and, on September 5, 1972, the Board gave the three carriers permission to do so for the period ending April 28, 1973 (the same as for the transcontinental capacity agreement).⁵⁴ The new agreement was submitted to the Board at the end of September,

⁵⁰ CAB Order No. 72-6-70, at 2 (June 16, 1972). Members Minetti and Murphy dissented from this decision.

⁵¹ AV. WEEK & SPACE TECHNOLOGY, Feb. 21, 1972, at 29; CAB Order No. 72-6-70, at 1 n.1 (June 16, 1972); Telephone conversation with Mr. Wayne Watkins, Office of Plans, CAB (March 13, 1973).

⁵² CAB Order No. 72-6-70, at 2 (June 16, 1972).

⁵³ CAB Order No. 72-11-7, at 3, n.4 (November 2, 1972).

⁵⁴ CAB Order No. 72-9-13 (September 5, 1972). Members Minetti and Murphy dissented from this decision.

1972,⁵⁵ and it was approved on November 2, 1972, to become effective on December 15, 1972.⁵⁶ Here again, the then current Board implied that this would be the final extension of this agreement, but on March 9, 1973, the three carriers were given permission to engage in renewed capacity reduction discussions.⁵⁷ They submitted a new agreement in early May,⁵⁸ and, as in the case of the Transcontinental agreement, no public announcement of the CAB's decision has been made as of the end of July 1973.⁵⁹

C. Summary

In all, the CAB has approved seven capacity agreements—four concerning airport or air traffic control problems and three concerning city pairs. Agreements have been sought for other city pairs, but without success.⁶⁰ The CAB has shown little reluctance in authorizing the airport type agreements, but when approving the various city pair agreements prior to March 1973, the Board collectively and individually expressed the hope that these agreements would be only temporary, and that a return to "competitive" scheduling would soon be feasible.⁶¹ Also, Members Minetti and Murphy generally dissented from the decisions regarding the transcontinental and the New York/Newark-San Juan agreements on the grounds that they reduced competition among the airlines serving each city pair.⁶²

⁵⁵ CAB Agreement No. 23055-A1, Doc. No. 22908, *Agreements Filed with the Civil Aeronautics Board Under Section 412(a) During the Week Ending September 28, 1972*, at 1.

⁵⁶ CAB Order No. 72-11-7 (November 2, 1972). Members Minetti and Murphy dissented from this decision.

⁵⁷ CAB Order No. 73-3-30 (March 9, 1973). Member Minetti dissented from this decision.

⁵⁸ CAB Agreement No. 23672, Doc. No. 22908, *Agreements Filed with the Civil Aeronautics Board Under Section 412(a) During the Week Ending May 10, 1973*, at 1.

⁵⁹ CAB, *Weekly Summary of Orders and Regulations* (July 23-28, 1973).

⁶⁰ For example, in September 1972, Alaska Airlines requested authority to discuss capacity reductions with Western and Northwest in the Seattle-Anchorage nonstop city pair. AV. WEEK & SPACE TECHNOLOGY, Sept. 18, 1972, at 27. This application was dismissed by the Board (under delegated authority) in CAB Order No. 72-12-82 (December 18, 1972).

⁶¹ See, e.g., CAB Order No. 71-8-58, at 2, n.5 (August 12, 1971); CAB Order No. 71-8-91, at 5 (August 19, 1971), and Minetti, Member, Concurring and Dissenting at 1; CAB Order No. 72-6-70, at 3-4 (June 16, 1972).

⁶² See their dissents to the orders listed in notes 42, 44, 48, 50, 54, 56, and 57, *supra*.

Only time will tell whether the city-pair type capacity agreements are indeed temporary, or whether the Board will continue the revised policy adopted in March 1973 of encouraging the use of capacity agreements to solve various airline problems. On the other hand, there is presently no reason to expect that the airport type capacity agreements will be allowed to lapse. So long as *any* type capacity agreements exists, however, some output will be allocated among carriers and thus a fundamental imperfection of the present airline cartel will be reduced.

III. EFFECTS OF CAPACITY AGREEMENTS

At least three relevant questions can be asked about the effects of capacity agreements. First, do they actually succeed in significantly reducing flight frequencies? Secondly, to what extent do the different provisions of various capacity agreements affect airline performance? Lastly, does the adoption of capacity agreements result in airlines increasing their use of still other types of rivalry?

A. *Flight Frequency Reduction*

There is little doubt that capacity agreements do indeed limit flight frequencies. Some evidence is provided by airport activity data. The FAA's High Density Rule, and the associated airport capacity agreements, went into effect at the five large airports on June 1, 1969, so that the total number of departures scheduled by U.S. carriers for the 12 months ended June 30, 1969, reflects unrestrained operations for 11 months, while similar data for the 12 months ended June 30, 1970, are for a period entirely covered by quota restrictions. Table No. 3 shows that the five airports having capacity agreements had changes in scheduled departures ranging from minus 10.1 percent to plus 5.2 percent, while "all other large hubs" in the 48 contiguous states had a 5.4 percent increase in fiscal year 1970 over fiscal year 1969. Of course, other things occurred that reduced schedules during fiscal year 1970,⁶³ but these reductions, or relatively small increases, in schedules do

⁶³ For example, wide-bodied aircraft were introduced in January 1970, increasing numbers of stretched aircraft were operated, and the "sick-out" of FAA air traffic controllers occurred in March and April of 1970. CAB, HANDBOOK OF AIRLINE STATISTICS 517 (1971); CAB Order No. 70-4-5 (April 2, 1970).

indicate that the FAA's quotas and the associated capacity agreements had some effect in reducing flight frequencies.⁶⁴

TABLE No. 3

DEPARTURES SCHEDULED BY U.S. CARRIERS IN SYSTEM OPERATIONS
AT AIRPORTS OPERATING UNDER THE FAA HIGH DENSITY RULE
12 MONTHS ENDED JUNE 30, 1969 AND 1970⁶⁵

<i>Airport</i>	<i>Departures Scheduled</i>		<i>Percent Change</i>
	<i>During 12 Months Ended June 30, 1969</i>	<i>1970</i>	
Chicago-O'Hare	291,418	298,730	2.5%
John F. Kennedy	145,565	130,915	-10.1
La Guardia	111,894	117,760	5.2
Newark	85,566	84,952	- 0.7
Washington National	109,397	106,509	- 2.6
Total—5 Airports	743,840	738,866	- 0.7
All Other Large Hubs	1,651,957	1,740,978	5.4

Clearer evidence that capacity agreements do reduce schedule frequencies is available from the transcontinental capacity agreement. As already mentioned, the CAB reported that 25.9 percent fewer departures were operated in the four city pairs during the 12 months ended September 30, 1972, than during the preceding 12 months ended September 30, 1971 (immediately prior to the effective date of this agreement).⁶⁶ More detailed evidence is presented in Table No. 4 which gives the number of weekly one-way flights scheduled in these city pairs by each of the three carriers on selected dates. The schedules for June 1, 1971, represent the pre-agreement base period; those for September 1, 1972, the final period under the original agreement; those for September 16 to October 28, 1972, the period when the agreement was temporarily

⁶⁴ The FAA reported a 46.5 percent reduction in delays in the first half of fiscal year 1970 over the first half of fiscal year 1969 for the five airports covered by its quotas. Dept. of Transportation, *Fourth Annual Report, Fiscal Year 1970* 73 (1971).

⁶⁵ CAB/FAA, AIRPORT ACTIVITY STATISTICS OF CERTIFICATED ROUTE AIR CARRIERS (12 Months Ended June 30, 1969), at 291-92; (12 Months Ended June 30, 1970), at 295-96.

⁶⁶ A total of 36,198 departures were operated in the four city pairs during the twelve months ended September 30, 1972, while 48,854 departures were operated in the previous twelve months. CAB Order No. 73-4-98, app. A (April 24, 1973).

suspended; and, finally, the schedules for November 1 and 15, 1972, represent the period essentially following the Board's approval of the extension of the agreement.⁶⁷ These data show that 150 fewer weekly one-way flights were scheduled in the four city pairs on September 1, 1972, than on June 1, 1971, thereby indicating a 13.7 percent reduction in flights if one makes the assumption that there would have been no "natural" growth in schedules over this fourteen-month period. Similarly, there were 75 (about 8.7 percent) fewer weekly flights scheduled in November 1972 (after the agreement was extended) than during the September 16-October 28, 1972, period of unrestrained scheduling.

TABLE NO. 4

NUMBER OF EQUIVALENT^a ONE-WAY NONSTOP FLIGHTS SCHEDULED
IN THE TRANSCONTINENTAL CITY PAIRS
BY AIRLINE, DIRECTION, REGULARITY, AND AIRCRAFT TYPE
SELECTED DATES, 1971-1972⁶⁸

Date	Air-Line	EB/WB ^b Number	Weekly One-Way Nonstop Flights ^a Scheduled								
			Daily Wide-Bodied				Daily Wide-Bodied				
			No.	%	No. ^a	%	Number	No.	%	No. ^a	%
			A. NY-LA				B. NY-SF				
6/1/71 ^c	AAL	70/75	140	96.6	84	57.9	41/48	77	86.5	56	62.9
	TWA	63/63	126	100.0	84	66.7	49/49	98	100.0	56	57.1
	UAL	49/49	98	100.0	28	28.6	49/49	98	100.0	28	28.6
	Total	182/187	364	98.6	196	53.1	139/146	273	95.8	140	49.1
9/1/72	AAL	62/56	112	94.9	84	71.2	39/39	70	89.7	56	71.8
	TWA	52/52	84	80.8	84	80.8	41/41	70	85.4	56	68.3
	UAL	46/46	49	53.3	60	65.2	41/41	42	51.2	56	68.3
	Total	160/154	245	78.0	228	72.6	121/121	182	75.2	168	69.4

⁶⁷ Minor schedule adjustments frequently occur during various schedule periods. To avoid complications resulting from such changes, the schedules in effect at the specified dates are used to represent the entire period. There were no non-stop schedule changes in the four city pairs during the period from September 16 through October 28, 1972. Minor adjustments occurred from October 29 to November 1, 1972, but even though the CAB did not officially approve the schedule agreement extension until November 2, all carriers complied with the agreement as of October 29, 1972. Finally, it should be recognized that there is about a three-week lead time between the finalization of schedules and their publication in the OFFICIAL AIRLINE GUIDE. For example, the September 15, 1972 schedules were in the hands of the GUIDE before noon, August 22, while the October 29, 1972 schedules were delivered prior to noon, October 9, 1972. See p. 6 in both the September 15 and November 1 editions of the OFFICIAL AIRLINE GUIDE.

⁶⁸ OFFICIAL AIRLINE GUIDE (Quick Ref. N.Am. ed.), for the indicated dates in the table.

9/16	AAL	49/49	98	100.0	56	57.1	35/35	70	100.0	28	40.0
to	TWA	49/49	98	100.0	56	57.1	35/35	70	100.0	28	40.0
10/28/72	UAL	42/42	84	100.0	42	50.0	35/35	70	100.0	28	40.0
	Total	140/140	280	100.0	154	55.0	105/105	210	100.0	84	40.0
11/1/72	AAL	50/50	84	84.0	60	60.0	29/29	56	96.6	28	48.3
11/15/72	TWA	44/44	70	79.5	56	63.6	30/30	56	93.3	28	46.7
	UAL	38/38	63	82.9	42	55.3	30/30	56	93.3	28	46.7
	Total	132/132	217	82.2	158	59.8	89/89	168	94.4	84	47.2

C. CHI-SF

D. WASH-LA

6/1/71 ^c	AAL	49/49	98	100.0	28	28.6	28/21	49	100.0	28	57.1
	TWA	49/49	98	100.0	56	57.1	21/21	42	100.0	0	0.0
	UAL	49/49	98	100.0	28	28.6	28/28	56	100.0	0	0.0
	Total	147/147	294	100.0	112	38.1	77/70	147	100.0	28	19.0
9/1/72	AAL	42/42	84	100.0	28	33.3	25/21	35	76.1	28	60.9
	TWA	42/42	84	100.0	56	66.7	20/20	28	70.0	0	0.0
	UAL	42/42	56	66.7	28	33.3	26/26	42	80.8	28	53.8
	Total	126/126	224	88.9	112	44.4	71/67	105	76.1	56	40.6
9/16	AAL	35/35	70	100.0	28	40.0	25/21	35	76.1	28	60.9
to	TWA	35/35	70	100.0	28	40.0	21/21	42	100.0	0	0.0
10/28/72	UAL	42/42	84	100.0	28	33.3	28/28	56	100.0	28	50.0
	Total	112/112	224	100.0	84	37.5	74/70	133	92.4	56	38.9
11/1/72	AAL	35/35	70	100.0	28	40.0	22/21 ^e	35 ^e	81.4 ^e	28	65.1
11/15/72	TWA	35/35	70	100.0	28	40.0	19/19	21	55.3	0	0.0
	UAL	35/35 ^d	70	100.0	28	40.0	25/25	14	28.0	24	48.0
	Total	105/105	210	100.0	84	40.0	66/65	70	53.4	52	39.7

^a In terms of conventional jet flights. One wide-bodied jet flight was considered equivalent to two conventional jet flights. Thus, the actual number of schedules operated with wide-bodied aircraft was one-half the number shown.

^b Eastbound/Westbound.

^c June 4, 1971, for American.

^d The *Official Airline Guide* shows two flights (Nos. 131 and 135) operated by United in this city pair at almost identical times. United has advised that this was an error in the *OAG* and that flight No. 131 was not operated in this city pair on these dates.

^e Effective November 18, 1972, American added one eastbound, conventional jet schedule, thereby bringing its eastbound services to 23 flights and filling its full quota of schedules. This added flight converted a six-day-per-week service into a daily operation which brought American's total flights scheduled daily to 42, or 95.4 percent of all flights scheduled.

Similar data for the New York-San Juan capacity agreement are given in Table No. 5. This table shows that a total of 513.8 one-way flights per week (in terms of equivalent conventional jets) were scheduled in this city pair as of June 15, 1972. The implementation of the capacity agreement on August 1, 1972, resulted in 73.6 fewer weekly flights being scheduled during the

agreement's peak period for a 14.3 percent reduction. The suspension of the original agreement saw an increase of 11.6 one-way flights per week during November over the number scheduled in the off-peak October period of the agreement, and the first part of December saw this extra number increased to 35.4 one-way flights per week. These were 3.9 and 11.9 percent, respectively, over the October agreement level, and they occurred even though it was known by November 2 that the CAB had approved an extension of the agreement effective December 15, 1972.

TABLE No. 5

NUMBER OF EQUIVALENT^a ONE-WAY NONSTOP FLIGHTS SCHEDULED
BETWEEN NEW YORK/NEWARK AND SAN JUAN
BY AIRLINE, DIRECTION, REGULARITY, AND AIRCRAFT TYPE
SELECTED DATES, 1972-1973⁶⁹

Date	Airline	Weekly One-Way Nonstop Flights ^a			Scheduled	
		SB/NB ^b Number	Daily No.	%	Wide-Bodied No. ^c	%
7/15/72	AAL	91 / 91	182	100.0	140	76.9
	EAL	95.9/ 95.9	177.8	92.7	119	62.0
	PAA	70 / 70	140	100.0	140	100.0
	Total	256.9/256.9	499.8	97.3	399	77.6
8/15/72 ^d	AAL	77 / 77	119	77.3	120	77.9
	EAL	81.1/ 81.1	109.2	67.3	125.8	77.6
	PAA	62 / 62	119	96.0	110	88.7
	Total	220.1/220.1	347.2	78.9	355.8	80.8
9/15 to 10/28/72 ^e	AAL	52 / 52	49	47.1	60	57.7
	EAL	55.4/ 55.4	73.5	66.3	88.4	79.8
	PAA	41.5/ 41.5	63	75.9	45	54.2
	Total	148.9/148.9	185.5	62.3	193.4	64.9
11/ 1/72 11/15/72	AAL	55 / 55	35	31.8	70	63.6
	EAL	58.2/ 58.2	73.5	63.1	88.4	75.9
	PAA	41.5/ 41.5	63	75.9	45	54.2
	Total	154.7/154.7	171.5	55.4	203.4	65.7
12/1 to 12/12/72	AAL	55 / 55	35	31.8	70	63.6
	EAL	70.1/ 70.1	109.2	77.9	112.2	80.0
	PAA	41.5/ 41.5	63	75.9	45	54.2
	Total	166.6/166.6	207.2	62.2	227.2	68.2
1/ 1/73 ^d	AAL	82 / 82	140	85.4	110	67.1
	EAL	78 / 78	122.9	78.8	98.6	63.2
	PAA	65.5/ 65.5	105	80.2	125	95.4
	Total	225.5/225.5	367.9	81.6	333.6	74.0

⁶⁹ *Id.*

3/ 1/73 ^a	AAL	66 / 66	52.5	39.8	100	75.8
	EAL	71.7/ 71.7	101.5	70.8	102	71.1
	PAA	52 / 52	35	33.6	80	76.9
	Total	189.7/189.7	189	49.8	282	74.3

^a See the footnote to Table No. 2 for the weights used to convert all aircraft types to B-707/DC-8 equivalents.

^b Southbound/Northbound.

^c The actual number of wide-bodied jet schedules operated was 40% (AAL and PAA) or 59% (EAL) of the number of conventional jet schedules given in this column.

^d A peak period of the capacity agreement.

^e An off-peak period of the capacity agreement.

Tables Nos. 4 and 5 also show that Eastern and United were the most aggressive of the five carriers in increasing schedules when the agreements were temporarily suspended. Taking all four city pairs of the transcontinental agreement together, it can be seen that United scheduled 40 excess one-way flights per week, compared with TWA's 24 and American's net of 12 (14 flights over in two city pairs and two flights under in one pair). Thus United scheduled almost 53 percent of the net excess flights. In the case of New York-San Juan, Pan American complied with the previous agreement throughout the period from October 29 to December 14, 1972. American, on the other hand, scheduled an average of six excess flights per week over the off-peak agreement level, while Eastern scheduled 5.8 such flights during November and 29.4 flights during the first two weeks of December.

Overall, the data are quite consistent in showing that this type of city pair capacity agreement has effectively reduced schedule frequencies in individual city pairs. In addition, they indicate that some carriers are constrained more than others by the agreements.

B. Airline Performance

Capacity agreements affect airline performance in more ways than simply reducing flight frequencies. One factor that is influenced is schedule regularity. Information given in Tables Nos. 4 and 5 show that agreements result in decreases in the percentage of total flights operated daily (that is, seven days each week with no change in equipment type or schedule times). Prior to the implementation of the capacity agreements almost all flights in the five city pairs were scheduled to operate seven days a week. In addition, during the month and a half when the transcontinental

capacity agreement was suspended this scheduling practice was resumed by all carriers in all city pairs with just one exception (American, in the Washington/Baltimore-Los Angeles city pair). Under the capacity agreement, in contrast, daily service on all schedules occurred only in the Chicago-San Francisco city pair, while the other city pairs were characterized by schedule irregularities. Thus it appears that flight schedules are more closely tailored to weekly traffic variations under the capacity agreements than when there are no agreements.⁷⁰

A second factor is the extent to which the use of wide-bodied aircraft has been influenced by the capacity agreements. Table No. 4 shows that the absolute use of wide-bodied aircraft was largely unaffected by the transcontinental agreement. American and TWA scheduled the same number of flights with such aircraft on June 1, 1971, (before the agreement became effective) as on September 1, 1972, (at the end of the agreement). United essentially doubled its use of wide-bodied jets between these two dates, but its use of such aircraft was obviously limited during the first period, while by the second it had achieved rough parity with American and TWA in this respect. A similar comparison between the schedules for the September 16-October 28, 1972 period, (when the capacity agreement was temporarily suspended) and the November schedules (after the agreement was reinstated) again shows very little absolute change in the use of wide-bodied jets. Both of these cases indicate that schedule adjustments resulting from this capacity agreement have mainly affected the amounts of service offered with conventional jets.

The pattern differs under the New York-San Juan agreement. Table No. 5 shows that Pan American's use of wide-bodied (B-747) aircraft was reduced from 100 percent as of July 15, 1972, (just prior to the agreement) to as low as 54.2 percent

⁷⁰ Similar fluctuations in weekly schedules characterized the operations of the California intrastate carriers between 1949 and 1965 when there was little regulation of intrastate service in contrast to the CAB's extensive regulation of interstate airlines. Thus in terms of scheduling, an important similarity in airline performance exists under very limited regulation and under the most extensive regulation practiced to date. Significant differences have existed, however, in other performance areas. For example, the coach fares per mile of CAB-regulated airlines have been as much as twice as high as those of the California intrastate carriers. See W. JORDAN, *AIRLINE REGULATION IN AMERICA: EFFECTS AND IMPERFECTIONS* 109-13, 206-9 (1970).

(from mid-September to mid-December when PAA operated at its off-peak levels as established by the agreement). American was somewhat less influenced by the agreement, but it can be seen that during the off-peak period from September 10 through October 28, 1972, its use of B-747s did fall to the lowest level of all the periods studied. Eastern, on the other hand, shows a significant increase in the use of wide-bodied jets. Eastern's aircraft, however, is the L-1011, which is appreciably smaller than the B-747s operated by American and Pan American.

One reason for these performance differences seems to lie in the various weights assigned to different aircraft in the two capacity agreements. In the transcontinental agreement, all wide-bodied aircraft (B-747, DC-10, and L-1011) have been counted as the equivalent of two conventional jets,⁷¹ while in the New York-San Juan agreement the DC-10 and L-1011 have weights of 1.7 and the B-747 has a weight of 2.5.⁷² Thus the B-747 has carried an appreciably higher penalty (in terms of a reduction in total flight frequencies within a given allotment of conventional jet frequencies) in the New York-San Juan agreement than in the transcontinental agreement. Just the opposite has been true for the DC-10 and L-1011. The relatively stable use of wide-bodied aircraft in the transcontinental city pairs, the reduced use of B-747s between New York and San Juan, and the increased use of L-1011s in this city pair are all quite consistent with these different weights. This indicates that the relative use of aircraft types can be significantly influenced simply through the assignment of different weights to various aircraft.

Additional evidence regarding the effects of capacity agreements on airline performance is available from Canadian experience. Prior to 1959 Air Canada (then called Trans-Canada Air Lines) was the only air carrier allowed to provide transcontinental service in Canada. On February 19, 1959, the Canadian Air Transport Board (ATB) authorized CP Air (then called Canadian Pacific Air Lines) to operate one daily round trip between Vancouver, Winnipeg, Toronto, and Montreal to connect its international operations conducted from Vancouver and Montreal.⁷³

⁷¹ See the note at TABLE No. 1.

⁷² See the note at TABLE No. 2.

⁷³ ATB, Decision Serial No. 1229, at 3 (February 19, 1959).

This highly restrictive capacity allocation was maintained until June 14, 1967, when CP Air was allowed to increase its service to two daily round trips.⁷⁴ Then, on April 1, 1969, the Air Transport Committee (ATC) of the Canadian Transport Commission authorized CP Air to expand to four daily round trips followed by an increase to five daily round trips effective June 15, 1969.⁷⁵ These last two increases were made in conjunction with a new policy which allowed CP Air to provide up to 20 percent of the total transcontinental available seat-miles (ASM). CP Air's ASM share was liberalized to 25 percent on January 9, 1970, with Air Canada's share being reduced to 75 percent.⁷⁶ Thus between 1969 and early 1970, the type of capacity allocation was changed from one where CP Air was assigned a specific number of flights to one where each carrier was allowed to operate a percentage of total ASM.

It is reasonable to expect that this change in allocation method would have a significant effect on CP Air's performance, and this proved to be the case. When limited to one or two daily round trips, CP Air operated large aircraft (first turboprop Britannias and then DC-8s),⁷⁷ thereby increasing its capacity and passenger appeal within its frequency restriction. When it was allowed to operate five daily round trips and then a specified percentage of total ASM, CP Air began providing service mainly with small aircraft. As of June 20, 1969, it scheduled 35 weekly round trips between Montreal/Toronto and Vancouver—80 percent with B-737-200s and only 20 percent (one daily round trip) with DC-8s.⁷⁸ In contrast, Air Canada operated 34 weekly round trips in the Montreal-Vancouver city pair, and 64 between Toronto

⁷⁴ ATB, Order No. 4751 (June 14, 1967).

⁷⁵ ATC, Order No. 1969-A-45, at 2 (February 12, 1969). Calgary, Edmonton, and Ottawa were added to CP Air's transcontinental route on February 1, 1968; ATC, Order No. 1968-A-102, at 1 (February 1, 1968). All of these orders include a long-haul restriction requiring CP Air to serve both Montreal and Vancouver on every transcontinental flight. The Air Transport Board was incorporated into the Canadian Transport Commission in the form of the Air Transport Committee on September 17, 1967. See Statistics Canada, *AVIATION IN CANADA*, 1971 37 (1972).

⁷⁶ ATC, Order No. 1970-A-23, at 1 (January 9, 1970).

⁷⁷ OFFICIAL AIRLINE GUIDE, C 513-15 (N.Am. ed. June, 1959), C 654-55 (N.Am. ed. June, 1961).

⁷⁸ OFFICIAL AIRLINE GUIDE, 413, 662, 673-74 (Quick Ref. N.Am. ed. June 15, 1969).

and Vancouver, with DC-9-30s accounting for only about 32 percent of these round trips and the remainder being operated with standard and stretched DC-8s.⁷⁹

Four years later, in May 1973, CP Air had increased its frequency to 55 weekly round trips between Montreal and Vancouver, and 48 round trips in the Toronto-Vancouver pair.⁸⁰ About 84 percent of these flights were operated with B-737-200s or B-727-100s, while DC-8s accounted for 16 percent (nine weekly round trips). Air Canada operated 42 Montreal-Vancouver weekly round trips, and 38½ round trips between Toronto and Vancouver.⁸¹ Half of its Montreal-Vancouver flights and only nine percent of its Toronto-Vancouver schedules were operated with DC-9-30s—the remainder utilized DC-8s, L-1011s, and B-747s. Finally, it is relevant to point out that at this time all of Air Canada's flights were operated seven days a week while only 76 percent of CP Air's flights were operated daily.

The Canadian experience indicates that a capacity allocation based on the number of flights operated (regardless of aircraft size) encourages the use of larger aircraft, while an allocation based on available seat-miles promotes the use of smaller aircraft to increase schedule frequencies. This latter method of allocation could also encourage a reduction in the number of seats installed in each aircraft, assuming, of course, that seat density is not controlled by the agreement. Finally, the effects of capacity limitations on the tailoring of flights in response to fluctuating weekly passenger demand is also shown in CP Air's scheduling practices as opposed to the stable seven-days-a-week schedules of Air Canada.

C. Other Types of Rivalry

Given the fundamental rivalry among carriers to obtain larger amounts of traffic (due to the CAB's failure to assign specific traffic shares to each carrier) it can be predicted that, following the implementation of capacity agreements, the carriers will emphasize other kinds of service-quality rivalry, such as:

- i. operating newer, larger, and more spacious aircraft (unless

⁷⁹ *Id.*

⁸⁰ OFFICIAL AIRLINE GUIDE, 451, 710, 724-26 (N.Am. ed. May 15, 1973).

⁸¹ *Id.*

- penalties are imposed in the agreements to discourage this).
- ii. introducing faster aircraft.⁸²
 - iii. providing better in-flight service (more leg room, larger seats, better meals, more entertainment, more attractively dressed stewardesses, and so on).
 - iv. improving ground service through larger and more comfortable terminals, faster baggage handling, more ticket offices with larger staffs, etc.

These service improvements will continue until their costs encourage the airlines to make agreements to restrain their rivalry in these areas—just as the International Air Transport Association “outlawed” lounges in the economy sections of international flights,⁸³ and, in 1958, settled the “sandwich war” by specifying the size and contents of sandwiches to be served by the North Atlantic carriers and then assessing fines on those who failed to comply with its specifications.⁸⁴

Public statements by airline officials show that they understand this aspect of capacity agreements. For example: “United and TWA officials claim the (capacity) agreement benefits passengers because it forces the carriers to intensify competition in other areas such as inflight service.”⁸⁵

Substantial experimentation in in-flight services occurred during the summer of 1972. Live entertainment was introduced with musicians (individuals, duos, and trios), magicians, caricaturists, wine-tasting hosts, Playboy Bunnies, and various baseball and football players. Lounges were installed in wide-bodied aircraft with American adding an electronic piano-bar. TWA provided a battery-operated draw-poker machine in its B-747s, and dominos, a popular game in Puerto Rico, were added to Pan American’s B-747 lounges on San Juan flights. Additionally, emphasis was placed on first-run movies and up-to-the-minute musical programs in the more traditional forms of in-flight entertainment.⁸⁶

⁸² In this context it is relevant to note the Board’s decision to allow scheduled airlines to hold discussions for 180 days regarding the establishment of standard flight times or cruise speeds in order to conserve aviation fuel. CAB Order No. 73-5-123 (May 25, 1973).

⁸³ AV. WEEK & SPACE TECHNOLOGY, Oct. 23, 1972, at 107.

⁸⁴ AMERICAN AVIATION, Sept. 8, 1958, at 58.

⁸⁵ AV. WEEK & SPACE TECHNOLOGY, Feb. 7, 1972, at 24-25.

⁸⁶ AV. WEEK & SPACE TECHNOLOGY, Oct. 23, 1972, at 106. This is from a five-page article entitled *Entertainment Offers New Potential*.

While there are many ways to practice service-quality rivalry, it should be recognized that this rivalry can also be controlled through the auspices of CAB regulation. The recent move to eliminate coach lounges from wide-bodied aircraft is a prime case in point. On January 23, 1973, the CAB authorized TWA to reduce its New York-Los Angeles one-way fare by \$10, effective April 29, 1973.⁸⁷ In its decision, the Board said:

If carriers providing lounge service conclude that operations with a price differential are feasible there would, of course, be no basis for concern on their part. If, on the other hand, these carriers conclude that they must be competitive on price, they are free to discontinue lounge services. In that event, the necessity for a fare reduction would be eliminated and the present fare, which is based upon the cost of operations without a lounge, would likely continue. The choice is, of course, up to the individual carriers.⁸⁸

The opinion of American and United regarding the relative appeal to passengers of somewhat lower prices versus higher service quality is demonstrated by their responses to TWA's proposed fare reduction. They both opposed TWA's proposal before the CAB, but three weeks after the Board authorized the fare reduction they announced their decisions to remove all coach lounges from their wide-bodied aircraft, thereby allowing all carriers to maintain the higher fare while ending the "Great Lounge War."⁸⁹

The key to the above actions was the CAB's decision in Phase 6A (Seating Configurations) of the *Domestic Passenger-Fare Investigation* (DPFI). Among other provisions concerning seat density, the Board decided:

6. Any carrier who operates a coach lounge may continue to do so at the normal coach fare; however, upon a showing of an adverse competitive impact, a non-lounge operator may establish a lower fare at the level necessary to meet such competition, and

⁸⁷ CAB Order No. 73-1-69 (January 23, 1973). Note that the unusual three-month delay in implementation allowed ample time for the other carriers to react to TWA's proposal before it went into effect.

⁸⁸ *Id.* at 4. Another example of service-quality rivalry is given in footnote 2, p. 3 of this order: "In September of 1970, United increased its frequencies in the market, introduced B-747 service, installed five-across coach seating in conventional aircraft and launched a vigorous advertising campaign relating to these new services. Contemporaneously, TWA introduced its Ambassador service, installed 2-plus-2 seating and likewise vigorously advertised these services."

⁸⁹ The Wall Street Journal, Feb. 14, 1973, at 20 (Midwest ed.).

which may not be matched by the lounge operator except upon a showing of special or unusual circumstances.⁹⁰

The judicious use of this provision should provide an effective tool in reducing the use of coach lounges by other carriers. Indeed, as this is being written, American, TWA, and United are endeavoring to use it to force Continental to remove coach lounges in the Chicago-Los Angeles city pair, with Continental responding by challenging the Board's policy in court.⁹¹

Overall, there appears to be two countervailing forces working in this matter. On the one hand, the control of flight frequency aspects of service-quality rivalry results in increased emphasis being placed on other areas of carrier rivalry. On the other hand, to the extent these other areas concern seating configurations, they can be limited by threatening fare reductions under the Phase 6A decision of the DPFI. The charges to coach passengers for liquor and for earphones to listen to the audio portion of in-flight movies are two more examples of where the Board has acted in this regard.⁹² Still other aspects of service-quality rivalry are uncontrolled at this time, but it seems reasonable to expect the CAB will act to control them should they become costly enough to warrant such action. Of course, as these other forms of carrier rivalry are brought under control, the imperfections of airline regulation will be reduced even more by the gradually increasing number of explicit and implicit airline agreements and regulatory policies.

IV. PREDICTIONS

Should the CAB decide to prohibit capacity agreements sometime in the future, one can predict that flight frequencies will continue to be used as a major form of service-quality rivalry. This, in turn, will lead to the continuation of the historical cycles of financial crises (associated with excess capacity due to the early and rapid introduction of excessive numbers of new aircraft) followed by periods of relative prosperity and higher load factors as

⁹⁰ CAB Order No. 72-5-101, at 41-42 (May 26, 1972).

⁹¹ CAB Order No. 73-6-4 (June 1, 1973); *See also* AV. WEEK & SPACE TECHNOLOGY, June 11, 1973, at 31.

⁹² AV. WEEK & SPACE TECHNOLOGY, Oct. 23, 1972, at 111.

the more stable traffic growth catches up with the bulges in increased capacity.

It is unlikely, however, that capacity agreements will be abolished, so let us emphasize what will probably happen with their continuation and expansion. In this regard, it should be recognized that there is no need to impose the rigidities, negotiating conflicts, and possible scale diseconomies of capacity agreements in all multicarrier city pairs or at all airports. Agreements covering, say, the 200 city pairs having the largest traffic flows, or agreements concerning the 20 largest airports will probably suffice to eliminate the great majority of excess airline capacity resulting from schedule-frequency rivalry.

Assuming the existence of whatever number of agreements is required to effectively limit overall airline capacity, and assuming that the agreements control flight frequencies rather than the number of available seat-miles operated, the following predictions can be made about the effects of such agreements:

- i. There would be a reduction in the number of aircraft operated.⁹³
- ii. The number of flight, maintenance, and operations personnel would also be reduced.⁹⁴
- iii. There would be an increase in airline rivalry based on operating aircraft with greater passenger appeal, providing superior in-flight and ground services, and undertaking increased promotional activities.
- iv. Relatively more personnel and other resources would be required to produce the new aspects of service-quality rivalry.
- v. More executives, regulators, lawyers, economists, statisticians,

⁹³ The reduction would be maximized if the agreements effectively prevent the use of existing aircraft to increase schedules in nonagreement city pairs. *See* CAB Order No. 72-4-63 (April 13, 1972), regarding allegations that American, TWA, and United transferred aircraft to nonagreement city pairs. From the carriers' (but not the aircraft manufacturers') viewpoint, it would be desirable to sell surplus aircraft to foreign airlines—preferably for use on their domestic routes rather than on international routes where they might provide increased rivalry for certain U.S. carriers.

⁹⁴ These individuals would have to find employment in lower paying jobs. Some might gravitate to the air taxi operators, perhaps to the detriment of local service carriers, but also to the possible benefit of the certificated carriers if a more developed air taxi network served to support and increase longer-haul traffic. There would also be some favorable impact on the military's ability to retain trained pilots and maintenance personnel.

etc., would be required to negotiate and enforce the capacity agreements.

Clearly, the indicated change of emphasis in airline rivalry would reduce the purchase, underutilization and early retirement of very costly aircraft, and would reduce the requirements for related personnel, while increasing the use of other resources. Recent experiments with live entertainment indicate that new forms of service-quality rivalry can also be quite costly,⁹⁵ but it is highly unlikely that these costs would even approach the very large savings resulting from utilizing fewer aircraft and operating personnel.

On the other hand, should capacity agreements be based on limiting the number of available seat-miles operated, the Canadian experience indicates that there would be an important change in the composition of the airlines' fleets. While total capacity would be reduced, the major impact would likely fall on wide-bodied and stretched aircraft, while there would be an appreciable increase in the demand for smaller aircraft (such as the Boeing 727-100). Furthermore, there would probably be a trend toward lower-density seating in all aircraft (thereby increasing seat-mile costs). A similar change in fleet composition would also occur under flight frequency agreements if relatively heavy weights were adopted for wide-bodied aircraft in comparison with smaller aircraft. Of course, any increase in the relative use of smaller aircraft would lessen the reductions in flight and operating personnel that would otherwise be achieved. Thus either an inappropriate aircraft weighting system or the adoption of available seat-miles as the controlled variable would reduce efficiencies attainable through capacity agreements.⁹⁶

It should be obvious by now that capacity agreements per se will not eliminate all service-quality rivalry among the airlines. Turning to economic theory, we find that Professor Dewey has foreseen this problem. He demonstrates that, in the long run,

⁹⁵ Another example of costly service-quality rivalry is Pan American's reducing the number of first-class seats from 58 to 38 in some B-747s in order to install dining tables and provide gourmet, restaurant-type service. *AV. WEEK & SPACE TECHNOLOGY*, July 3, 1972, at 28.

⁹⁶ Recall that the first transcontinental agreement reached by American, TWA, and United (and subsequently rejected by the CAB) was based on an available seat-mile allocation, as is their most recent agreement. CAB Orders Nos. 70-11-35 (November 6, 1970); *AV. WEEK & SPACE TECHNOLOGY*, June 4, 1973, at 36.

effective cartels where profits are not pooled waste more resources than do cartels where profits are pooled.⁹⁷ Applying this theory to the regulated airlines implies that with profit pooling the carriers would have an incentive to allow the lowest-cost airlines to produce all desired output in optimum-sized aircraft without rivalry from other carriers. This would maximize industry profits which could then be allocated on some predetermined basis so that all cartel members would be better off with profit pooling than they would be without it. Given this, and assuming the CAB wants, among other things, to increase (if not maximize) airline benefits and efficiency, it follows that non-pooling capacity agreements will be merely an intermediate step in the development of a more perfect airline cartel—in response, of course, to future crises that will result from business cycles, rivalry from other transport modes, advances in rival technologies, labor strife, ecological problems, and so forth.

Let us now consider what might happen within the U.S. and Canada should significant amounts of pooling occur in North America. The following predictions can be made:

- i. Service-quality rivalry between airlines would be eliminated.
- ii. Airline profits would increase (or losses decrease) as the airlines discovered the profit-maximizing levels and structures of service quality and fares.
- iii. Load factors would rise.⁹⁸
- iv. Demand for flight and ground personnel would be reduced, as would the demand for other resources used to provide in-flight and ground services.
- v. Aircraft replacement cycles would be more moderate and, unless frequent technological developments regularly reduced aircraft operating costs, these cycles would be much longer than heretofore.

Overall, absent monopoly power on the part of resource suppliers, the airlines should be able to maximize industry profits under an effective pooling arrangement. Their problems would be largely

⁹⁷ D. DEWEY, *MONOPOLY IN ECONOMICS AND LAW* 16 (1959).

⁹⁸ "Load factors in intra-European routes have shown a steady increase this fall, primarily due to pooling arrangements among the scheduled carriers which permit a direct control over seat capacity. In September, industry load factor on the European continent rose to 63.3% from 61.6% recorded in the same month last year." *AV. WEEK & SPACE TECHNOLOGY*, Dec. 14, 1970, at 31.

limited to operating efficiently, to foreseeing and adjusting to demand and supply changes, and to improving and policing cartel agreements.

Notice the qualification regarding the absence of monopoly power on the part of resource suppliers. This is an important stipulation. Actually, many resource suppliers do have monopoly power, so the following additional predictions are relevant:

- i. Airline labor unions would demand increasing shares of the monopoly gains for their members through higher wages and featherbedding. It follows that the Airlines Mutual Aid Agreement regarding strikes would play an increasingly important role in airline cooperation.⁹⁹
- ii. Aircraft manufacturers would endeavor to raise the prices of new aircraft by more than the amounts indicated by the increases in their unit costs due to producing fewer aircraft.
- iii. Prices would increase for the use of airways (increased taxes), airports, air terminals, petroleum products, legal and consulting services, and so forth.

Thus there would be a general sharing of the increased airline profits by all suppliers having some market power. (By the way, these developments could adversely affect the position of the U.S. in international markets—both in terms of providing airline services and in terms of supplying new transport aircraft and other airline equipment.)

The establishment of a really effective airline cartel would greatly increase economic efficiency by reducing the amounts of resources required to produce given quantities of output. At the same time, existing airline stockholders, remaining airline employees, and some airline suppliers would be wealthier. Obviously, most airline employees who were discharged because of the more efficient operations would be worse off, as would other suppliers of resources no longer purchased by the airlines. Also, passengers and shippers would generally be worse off since service quality would deteriorate with little or no decrease in prices.

Aircraft manufacturers would likely be hard hit by extensive capacity agreements and by pooling. The demand for new aircraft would be reduced, but, due to the increased airline profits per aircraft operated, this demand would have a lower price elasticity.

⁹⁹ See CAB Order No. 73-2-110 (February 27, 1973).

If new aircraft were significantly more efficient, had equal or greater passenger appeal than existing aircraft, and if the capacity and pooling agreements were not biased against new aircraft, manufacturers could expect a continuation of aircraft replacement cycles, but with fewer total sales and with the likelihood that each cycle would be more extended and would be of much smaller amplitude than the past three cycles. If, at the same time, manufacturers could organize an effective countervailing cartel they might be able to raise prices enough to retain historical profit levels, but this seems unlikely. Furthermore, since they are not regulated, the manufacturers would have the additional problem of circumventing the antitrust laws to organize their cartel.

Even though they lack market power, passengers and shippers would not be completely defenseless in the face of an effective airline cartel. As when dealing with any monopoly, they could compare the relative values and prices of airline services with those of other transport services and with the myriad of substitute goods available in the economy. The airlines would find that they could still sell more at lower prices, and they would still face demand curves that shift with changes in service quality. The airlines would have to respond to these facts of life on the demand side in order to maximize their profits (or minimize their losses). Furthermore, increased efficiency in airline production means that resources would be freed for other economic uses which, in turn, would lower the costs and prices of goods in other industries. Clearly, the tertiary and higher-order effects would be many and diverse.

V. CONCLUSION

This analysis of the source, development, and effects of airline capacity agreements has been aimed at providing a more thorough understanding of this regulatory innovation. Perhaps it will assist airline and CAB personnel to implement such agreements more effectively, and it may provide a basis for interested individuals to decide whether to support, oppose, or ignore these agreements. Doubtless, many present airline stockholders, executives, relatively senior employees, lawyers, etc. are delighted with the prospects of airline capacity agreements. On the other hand, aircraft manufacturers (and their stockholders, employees and suppliers), other

airline suppliers, relatively junior airline employees, and many airline customers have reason to oppose a widespread adoption of capacity agreements and other moves to perfect the airline cartel.

Those who value efficiency, conservation and reduced pollution may also applaud the results of capacity agreements.¹⁰⁰ It should be realized, however, that these desired goals can be achieved through other institutional arrangements. For example, the essentially non-regulated airline market structure that existed in California between 1949 and 1965 resulted in much greater efficiency on the part of the California intrastate carriers compared with that of the CAB-regulated airlines. The average annual load factors of all intrastate carriers ranged from 66 to 80 percent, they utilized their aircraft more intensively, and the output per employee of successful carriers was as much as double that of the CAB-regulated trunk carriers.¹⁰¹ At the same time, service quality was lower than under CAB regulation, but passengers were compensated for this by fares that were as much as 50 percent less than CAB-regulated fares.¹⁰²

This article has also demonstrated that unless care is taken in formulating the detailed provisions of capacity agreements, a good deal of potential efficiency can be lost through the utilization of less than optimal-sized aircraft and through the use of a greater than optimal number of flight and other operating personnel. Furthermore, it has shown that capacity agreements will not eliminate all carrier rivalry, will not remove all the imperfections in CAB regulation, and will not solve all airline problems. As difficulties continue to appear (albeit in somewhat modified form) there will be calls for still more regulation, and the logical extension of this is the eventual introduction of pooling among the domestic carriers.

Perhaps a note of warning is an appropriate way to end this

¹⁰⁰ " . . . [T]he Board said its tentative view is that capacity agreements are an immediately effective remedy toward lessening the energy crisis and for eliminating wasteful over-capacity in city-pair markets and may, in conjunction with other Board policies, serve to dampen and ultimately reverse the 'chronic and persistent industry-wide tendency to operate excessive capacity and the unnecessary operating costs associated thereunder.'" CAB Press Release No. 73-66 (April 24, 1973) regarding CAB Order No. 73-4-98 (April 24, 1973).

¹⁰¹ W. JORDAN, *AIRLINE REGULATION IN AMERICA: EFFECTS AND IMPERFECTIONS* 197-220, 233-36 (1970).

¹⁰² *Id.* at 53-56, 109-13, 276-87.

analysis. In an important article regarding the Interstate Commerce Commission, Professor Hilton traced the development of railroad regulation and the resulting railroad cartel. The following quotations from this article are relevant to the long-run airline situation:

Congress responded to the temporary problems attendant upon the end of federal control of the railroads in the (First World) War and to the onslaught of the decline of the industry about 1915 by converting the ICC from a body devoted to facilitation of private cartelization to an outright public cartel through the Transportation Act of 1920. This statute provided for minimum rate regulation, control of entry and exit, capital formation, consolidation, and several other normal accoutrements of a cartel. Notably, it provided for a target rate of return of 6 per cent for the industry. . . .

* * * *

The Act is open to the most hostile criticism that one may lay against any statute: it perpetuated the problem with which it was designed to deal. In retrospect, the railroad problem of the 1880's was a temporary and self-limiting one. The industry had attracted enough resources that the railroads would shortly have had to behave competitively whether they wished to do so or not. This prospect was widely looked upon as intolerable because it promised widespread bankruptcy and a long period of outflow of resources as a consequence of a chronically low rate of return. In retrospect, these circumstances were unavoidable, once the industry began to decline.¹⁰³

There is little indication today of a secular decline in the airline industry, but who in the early 20th century foresaw the decline of the railroads? The airline crises since the adoption of regulation in 1938 have occurred in the context of strong secular growth where a five percent annual increase in traffic is a bad year. Imagine the airlines facing important problems under a situation of modest long-run growth or even secular decline. They would, of course, continue to turn to regulation for solutions to such problems, and regulation can indeed provide temporary succour. The fact is, however, that despite its short-run usefulness, regulation can not counteract secular trends, and, in addition, it imposes or allows rigidities which are particularly costly when fundamental

¹⁰³ Hilton, *The Consistency of the Interstate Commerce Act*, 9 J. LAW & ECON. 87, 111-12 (1966).

conditions require flexibility and many small, but painful, adjustments.

Airline capacity agreements are but one step in the airlines' development of a fully effective cartel along classic lines. Those who promote these agreements will find it useful to be aware of the position of capacity agreements in this broader context, and to recognize that regulation must operate within the environment of fundamental economic forces. If they do, it may be possible for them to design the airline cartel so as to increase its ability to adjust to such changes, thereby enhancing its long-term viability and profit generating capability. At the same time, it should be recognized that any benefits derived from an effective (or imperfect) cartel accrue to a relatively small segment of the economy at the expense of many individuals and organizations.

