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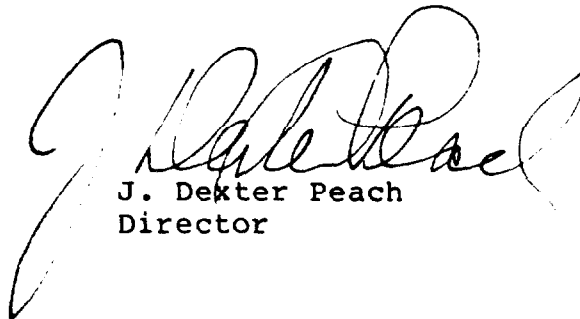
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The Honorable James J. Howard
Chairman, Committee on Public
Works and Transportation
House of Representatives

The Honorable Norman Y. Mineta
Chairman, Subcommittee on Aviation
Committee on Public Works and
Transportation
House of Representatives

This report, prepared in response to your January 26, 1984, request, discusses changes in the airline industry since enactment of the Airline Deregulation Act of 1978. It updates our report entitled The Changing Airline Industry: A Status Report Through 1982 (GAO/RCED-83-179, July 6, 1983). The report discusses airline competition, traffic, fares, service, and profits, and analyzes industry changes based on economic expectations of deregulation's effect. At your request, we did not obtain agency comments on the draft report.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 14 days from the date of the report. At that time we will send copies to interested parties and make copies available to others upon request.



J. Dexter Peach
Director

GENERAL ACCOUNTING OFFICE
REPORT

DEREGULATION:
INCREASED COMPETITION
IS MAKING AIRLINES MORE
EFFICIENT AND RESPONSIVE
TO CONSUMERS

D I G E S T

From 1938 to 1978, the Civil Aeronautics Board (CAB) controlled domestic interstate airline fares and the cities each airline served. Concerned that regulation made the industry inefficient and resulted in many fares being too high, the Congress enacted the Airline Deregulation Act of 1978. The act phased out CAB control of fares and service levels. (See pp. 1 and 2.)

At the request of the Chairmen, House Committee on Public Works and Transportation and its Subcommittee on Aviation, this report updates GAO's report entitled The Changing Airline Industry: A Status Report Through 1982 (GAO/RCED-83-179, July 6, 1983), and evaluates how industry changes compare with economic expectations of deregulation's impact.

The purpose of the deregulation act was to allow competitive market forces, rather than the federal government, to decide the quality, variety, and price of domestic air service. It was aimed at encouraging the formation of new airlines, expanding service by existing airlines, and bringing lower fares and better service to passengers. Recognizing that free competition might result in some communities losing air service, the act created an Essential Air Service Subsidy Program, which protected service to eligible communities through 1988. (See pp. 2, 3, and 7.)

To assess deregulation's effects, GAO compared economic expectations of deregulation with actual changes in the industry's structure (the number of airlines, each airline's share of traffic, and the ease with which they can begin new service to a city-pair), conduct (behavior in setting prices and levels of service), and performance (profitability, efficiency, and responsiveness to consumer preferences). This report does not address airline safety. (See pp. 8 and 9.)

Because many factors affected the airline industry since 1978, GAO could not quantify direct cause and effect relationships between deregulation and the industry's current status. However, GAO's analysis showed that increases in competition and changes in fares, service, and profitability were generally consistent with industry economists' expectations of deregulation's effects. Competition increased, fares generally fell, service improved for most passengers, and profits varied widely among airlines. The industry is becoming more efficient through lower operating costs and offers travelers more choice in fares and service. While some favorable trends in fares and service have emerged, further changes are likely because airlines are still adapting to deregulation. In addition, federal policies to control airport access can affect competition in the industry. (See pp. 3 to 7.)

MORE AIRLINES COMPETE

From 1938 to 1978, CAB received 79 applications for new trunk airlines--which generally provided service to major cities--but approved none because of its concern for protecting existing airlines from competition. While 30 airlines provided scheduled interstate service in 1978, after deregulation the number increased to 37 airlines in 1984. (See pp. 11 and 12.)

With increased competition, the largest airlines have been losing passengers to smaller and new airlines (which often offer lower fares). Nationwide, the percentage of passenger miles flown by the largest airlines (formerly called trunks) fell while smaller combined with new airlines almost doubled their percentage of passenger miles flown. As airlines changed the cities they served, more city-pairs (origin and destination points) were served by competing airlines. (See pp. 12 to 17.)

AVERAGE FARES FELL

While full fares rose, the average fare paid per mile (adjusted for inflation) fell 6 percent between 1978 and 1984. One reason was

the growing use of discount fares. (See pp. 19 to 21.)

A CAB study showed that, on average, airlines in 1983 were charging fares lower than the level that would have been set by a fare formula used before deregulation. Although public opinion often associates higher fares with small communities, GAO found that fare changes since deregulation are more closely related to the number of passengers traveling in a city-pair market (market size) than to community size.¹ GAO also found that some travelers to and from small communities paid fares higher than would be indicated based on the fare formula used prior to deregulation but, as a group, travelers to and from these communities usually averaged lower fares. (See pp. 23 to 28.)

SERVICE IMPROVED FOR MOST PASSENGERS

Increased competition brought better service, in terms of availability and convenience, to most airline passengers. Between 1978 and 1983, nonstop service expanded; departures and available seats increased, with most growth at larger communities; and the number of passengers who were able to stay on the same airline to complete a trip rose. (See pp. 28 to 36.)

But the overall trends mask some offsetting results. Airlines dropped nonstop service to some city-pairs; some small communities lost all air service. The number of city-pairs with jet nonstop service, which is generally faster, decreased slightly from 1978 to 1983, as competition pressured airlines to use the most cost-efficient aircraft on each flight. (See pp. 29 to 31.)

EFFICIENCY IS IMPROVING

Analysts expected deregulation to create new profit opportunities and that airlines'

¹Community size and market size are different measures. In GAO's study, community size is based on total passengers departing from a community to various destinations. Market size is the number of people traveling between two specific communities.

financial performance would vary with how effectively and how quickly they adapted to the more competitive environment. Increased fare competition in combination with events not directly connected to airline deregulation, including two economic recessions and rapidly escalating fuel prices, contributed to industry losses of \$4 billion from 1979 to 1984. However, as a group, what were formerly categorized as local service airlines earned profits on their operations, while until 1983 the larger trunk airlines lost increasing sums. In addition, several airlines, including two former trunks, declared bankruptcy. (See pp. 7 and 40 to 46.)

The industry's financial status seemed to reach a turning point in mid-1983; the industry as a whole showed a profit in the last half of 1983 and, in 1984, earned the highest operating profit in 11 years. Declining unit labor costs and fuel costs were major factors; together they made up 59 percent of operating expense in 1984. Still, as expected in a competitive industry sensitive to general economic conditions, individual airlines may continue to have financial problems and additional bankruptcies may occur in the future. (See pp. 46 to 48.)

CONSUMER CHOICE WIDENED BUT NOT EVERYONE BENEFITED

Compared to deregulation, regulation generally gave passengers higher quality service, in terms of in-flight amenities and uncrowded flights on large jet aircraft, but at a higher price. As anticipated by industry analysts, deregulation made airlines more responsive to consumer preferences, resulting in various fare/service combinations. Some airlines offer low fares and few service frills, while others offer more service at higher prices. Passengers who can schedule travel in advance and/or travel at off-peak times have greater opportunities for obtaining discount fares. The availability of more options should allow more consumers to find the price/service combination that is right for them. (See p. 51.)

Passengers in heavily traveled, long distance city-pairs gained the most from deregulation

as fares became more cost-based and increased competition produced greater choice in fares and service. Although fewer in number, passengers in many lightly traveled, short-distance city-pairs did not benefit from lower fares. (See pp. 51 and 52.)

AIRLINES ARE STILL
ADAPTING TO DEREGULATION

The airline industry matured during 40 years of government regulation and protection. In the years since the deregulation act, airlines have made many changes to adapt to a competitive environment, but further change is likely. Although the number of airlines may decrease if bankruptcies and mergers continue, the industry will probably remain competitive. The largest airlines may halt or reverse their declining market shares as they cut costs and improve efficiency. Service shifts will continue as airlines seek higher profits by changing the cities they serve and by offering different price/service options. More small communities will likely lose air service when federal subsidies end in 1988. Most communities receiving these subsidies are not progressing toward self-supporting air service and have lost passengers since deregulation. (See pp. 52 and 53.)

Airport capacity sometimes places practical limits on how many airlines can serve a city and how many flights they can schedule. The Federal Aviation Administration estimates that eight large airports have capacity problems, in terms of their ability to handle passengers, aircraft takeoffs and landings, or ground transportation during periods of peak demand. The number of these airports may reach 61 by the year 2000. Determining how to allocate airport capacity among competing airlines is an important issue because the strength and amount of competition depend in part on airlines being able to freely decide what cities they will serve. Currently allocations are set by scheduling committees made up of airlines. Some proposed methods of allocating airport capacity, such as restricting access by type of aircraft, could partially offset deregulation's benefits. Other methods, such as auctioning takeoff-landing

rights, are more consistent with a policy of promoting competition. (See pp. 52 and 53.)

Airline industry changes have been generally consistent with the anticipated effects of deregulation. Based on economic theory, it is likely that the continuing process of adjusting to deregulation will eventually bring fares close to per-passenger cost plus a reasonable profit in each city-pair. Competitive pressure will encourage efficiency and minimize cost. Service will be provided to all communities if enough passengers are willing to pay the per-passenger cost of providing service. But airlines are still adapting to deregulation; these long-run results may be years away. (See p. 53.)

AGENCY COMMENTS

GAO did not obtain agency comments on a draft of this report.

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ABBREVIATIONS

ATA	Air Transport Association
CAB	Civil Aeronautics Board
CED	Community and Economic Development Division
DOT	Department of Transportation
DPFI	domestic passenger fare investigation
FAA	Federal Aviation Administration
GAO	General Accounting Office
GGD	General Government Division
RCED	Resources, Community, and Economic Development Division
RPM	revenue passenger-miles

GLOSSARY

Available seat-miles	The aircraft miles flown on each flight segment multiplied by the number of seats available for revenue use on that segment.
Available seats	Installed seats in an aircraft, excluding any seats not offered for sale.
Certificate of public convenience and necessity	A certificate issued to an airline (previously by the Civil Aeronautics Board, now by the Department of Transportation) authorizing it to engage in air transportation.
Certificated airlines	A class of air carriers that hold CAB certificates of public convenience and necessity authorizing them to engage in air transportation.
Certificated point	A place authorized by CAB to receive scheduled air service by a certificated airline, including a place covering more than one community or served through more than one airport.
City pairs	The origin and destination cities of an air trip (also called a market or a route).
Commuter airlines	A class of noncertificated air carriers that operate small aircraft (under 60 seats) and conduct at least five round trips weekly between two or more points based on published flight schedules.
Departure	An aircraft takeoff from an airport.
Enplanements	The total number of passengers boarding aircraft.
Essential air transportation	The threshold number of departures linking a community to the nationwide air transport network. Two round trips per day, five days per week--or the level of service provided on the basis of the calendar year 1977 air carrier schedule, whichever is less--is the statutory minimum service.

Fare formula	A formula for setting domestic coach passenger fares. Developed by CAB in 1974, it consisted of a uniform terminal charge plus a line-haul charge that decreased with distance. The base formula, which was adjusted in later years for cost increases, was \$12 plus 6.75 cents per mile (0-500 miles); \$12 plus 5.15 cents per mile (501-1,500 miles); and \$12 plus 4.95 cents per mile (1,501 miles and over).
Flight, scheduled	Any air trip periodically operated between two places that is designated by a flight number or otherwise appears in the airline-published schedule.
Hub, air traffic	Communities fall into four hub classes as determined by each community's percentage of the total enplaned passengers in scheduled and nonscheduled service of the domestic certificated route airlines in the 50 states, the District of Columbia, and other U.S. areas designated by the Federal Aviation Administration. A large hub is a community that enplanes 1 percent or more of total enplaned passengers for all air services in the United States; a medium hub, from 0.25 to 0.99 percent; a small hub, from 0.05 to 0.24 percent; and a nonhub, less than 0.05 percent.
Hub-and-spoke network	A traffic system that feeds air traffic from small communities through larger communities to the traveler's destination via connections at the larger community.
Intrastate airlines	A class of noncertificated air carriers operating wholly within one state.
Load factor	The proportion of aircraft seating capacity that is actually sold, or used--determined by dividing revenue passenger-miles by available seat-miles.
Local service airlines	A class of air carriers that originally provided service to small and medium-sized communities on low-density routes to large hubs and that were eligible for CAB subsidies to cover operating losses from such service. These carriers have since evolved from their "feeder" airlines origination into medium to large airlines.

Official Airline Guide	A twice-monthly publication of the airlines' scheduled operations and services, showing service and fares to one city from all other cities where direct or simple connecting service is available.
Revenue passenger-mile	One paying passenger transported 1 mile in revenue service, computed by multiplying aircraft-miles flown by the number of paying passengers for each interairport flight.
Revenue ton-mile	One ton of revenue traffic transported 1 statute mile. Revenue ton-miles are computed by multiplying tons of revenue traffic by the miles that this traffic is flown.
Through-plane service	Air service between two cities using the same plane, even though the flight involves one or more en route stops.
Trunk airlines	A class of certificated route air carriers engaged in providing primarily domestic scheduled passenger service between medium and large hubs.
Yield	Revenue per passenger-mile.

CHAPTER 1

INTRODUCTION

This report on the airline industry is the fifth in a series to the Chairmen of the House Committee on Public Works and Transportation and its Subcommittee on Aviation (see app. II). In response to their request for an assessment of the airline industry under deregulation, we identified industry changes and compared them with economic expectations of deregulation's effects. Although the Congress deregulated airlines in 1978, the industry is still in transition from 40 years of regulation.

AIRLINE REGULATION, 1938-77

Industry-wide regulation of airlines began in 1938 to alleviate congressional concern over safety, airlines' financial health, and perceived inequities between airlines and regulated forms of transportation, such as railroads. Many airlines were near bankruptcy and service was unreliable. After a series of fatal crashes, the Congress concluded that safety depended on financial stability and that competition should be reduced. The Congress also believed that competition among forms of transportation was unfair to railroads and motor and water carriers, since they were regulated while airlines were not.

The Civil Aeronautics Act of 1938 (Public Law 706) applied to interstate airlines the public utility regulation used for other forms of transport, giving the Civil Aeronautics Board (called the Civil Aeronautics Authority until 1940) the same powers that the Interstate Commerce Commission had for regulating surface transportation. The Civil Aeronautics Board (CAB) decided how many airlines could operate between two points (a route, or city-pair market), and thereby the amount of competition. Airlines could not add or abandon routes or change the fares they charged without CAB approval. CAB held a hearing whenever an airline proposed a substantial fare change. Competitors could oppose the proposal at the hearing, or use the time to submit a matching fare proposal.

CAB limited the number of airlines in the industry. The trunk¹ airline industry in 1938 consisted of 16 airlines, contracting to 10 by 1974 through mergers. Between 1938 and 1978, CAB did not approve a new trunk airline, although 79 applications were filed. During that period, trunk airlines accounted

¹Trunk airlines primarily provided scheduled flights between major cities. Since CAB airline categories changed in 1981, the former trunk airlines and some others are now called "major airlines."

for almost 90 percent of industry revenue and traffic. CAB limited new airlines to local, charter, and commuter service.²

CAB's policy on allowing competitive service varied. In general, airline competition was allowed where traffic could support new service without seriously eroding the profitability of the existing airline. As a result, almost all major markets were usually served by two, but rarely more than three, airlines. Still, CAB denied most requests for route authority; in the early 1970's it instituted an unofficial moratorium on awarding new routes.

Congressional discontent with CAB policies and the record of intrastate airlines--which suggested that increased competition could lower fares without harming the industry's financial condition--spurred the movement to deregulate. The Congress believed that the Civil Aeronautics Act intended more competition than CAB had allowed and that its fare-setting practices made flying too expensive. A 1977 GAO study³ found that fares were probably higher than they would be with less regulation. Intrastate airlines, including Pacific Southwest, Air California, and Southwest, had more frequent flights and charged about half as much as CAB-regulated airlines charged for similar trips.

Because of the growing consensus about the benefits of competition, CAB in 1977 reduced restrictions on fare competition and let more airlines serve many city-pair markets. In 1978 industry operating profit rose more than 50 percent, airfares (in current dollars) fell for the first time since 1966, and traffic grew faster than it had in over 10 years. While general economic trends were partly responsible, the industry's performance helped convince the Congress that increased competition would benefit the airlines and the public.

AIRLINE DEREGULATION, 1978-84

The Airline Deregulation Act of 1978 (Public Law 95-504) phased out federal control over airline prices and routes. Its purpose was to allow competitive market forces to decide the quality, variety, and price of air service. Deregulation allowed new airlines to form and made it easier for existing

²Local service airlines originally provided scheduled service to small and medium-sized communities. They have since expanded service to many major cities. Charter airlines provided nonscheduled service. Commuter service was defined as airlines flying planes carrying 60 or fewer passengers.

³Lower Airline Costs Per Passenger Are Possible in the United States and Could Result in Lower Fares (CED-77-34, Feb. 18, 1977). GAO's study covered the period from 1969 to 1974.

airlines to provide service in new markets and abandon service in old ones. Deregulation also allowed airlines to compete through fare reductions. Industry analysts, on the basis of economic theory and operations of intrastate airlines (which CAB did not regulate), expected increased competition to significantly affect the industry's number of airlines, fares, service, profitability, and efficiency.

Airline Deregulation Act of 1978

The Airline Deregulation Act gave the airlines gradual freedom from CAB regulation of their routes and fares. Most of CAB's authority to regulate domestic air routes expired at the end of 1981; its authority to regulate domestic fares expired at the beginning of 1983. When the CAB went out of existence on December 31, 1984, its remaining functions were transferred to other federal agencies, primarily the Department of Transportation (DOT).

The act was intended to encourage the birth of new airlines, expanded service by existing airlines, lower fares, better service, and greater efficiency. These expectations were largely based on economic studies of regulation that also predicted the effects of deregulation.

Economic expectations

Economic theory suggested that, in the long run, deregulation would increase competition, thereby lowering costs and fares on average and changing service. However, theory could not predict how fast these changes would occur. Short-run changes, as the airlines adjusted to deregulation, might differ from expected long-run changes as airlines negotiated new labor contracts and purchased new aircraft. Results in individual markets or for individual airlines could differ from expectations for the industry in general.

Economic theory can help explain why certain events occur and can be used to predict what will happen in the future. Because theory is a generalization, it is true in the aggregate sense but is subject to individual exceptions. A number of airline industry analysts used economic theory to analyze regulation's effects and predict how deregulation would change the industry. Among the major studies were:

--Economic Regulation of Domestic Air Transport: Theory and Policy (1974); by George Douglas and James Miller III, then members of the Brookings Institution associated staff;

--The Economics of Regulation: Principles and Institutions (1971) by Alfred Kahn, who served as CAB chairman from 1977 to 1978; and

--"Airline Regulation and Market Performance" (1972) and "Domestic Trunk Airline Regulation: An Economic Evaluation" (1978) by Theodore Keeler.

We reviewed these and other studies (see app. IV) to determine the expected effects of deregulation on the airline industry. The analyses were based on standard microeconomic theory of how firms behave under differing amounts of competition and also on the operations and performance of intrastate airlines, which CAB did not regulate. The aggregate expectations of these studies are presented below and we refer to these predictions of deregulation's effects throughout this report's remaining chapters.

Increased competition

Since one of the purposes of regulation was to restrain competition, deregulation was expected to result in increased competition by allowing new airlines to form and permitting airlines to choose the markets they serve. New competition was expected to emerge on the routes that the airlines perceived to have the greatest profit potential. But deregulation would not necessarily result in more airlines competing in each market, or even in a majority of markets. The number of airlines serving any particular market could be about the same under deregulation--and in some cases less.

One prediction was that deregulation's most important effect would be the introduction of potential competition--the realistic possibility that a competitor will enter a market if the existing airline is inefficient or does not offer the price/service combinations that passengers want. According to economic theory, potential competition may induce an airline without competitors in a market to offer a price and service close to what would result under actual competition. The significance of potential competition is that it affects all markets, not just those served by two or more airlines.

Efficiency

Another prediction was that deregulation would make the industry more efficient. Regulation of routes had protected inefficient airlines from being replaced by more efficient competitors. The freedom of potential competitors to enter a market at will was expected to provide an incentive to greater efficiency and put downward pressure on costs.

Lower fares

A third major prediction was that removing route and fare regulation would result in lower fares for most passengers, although not necessarily in all markets. Since regulated fares were based on average airline costs and not on the cost incurred

by the most efficient airline in a market, industry analysts believed fares in many markets were higher than the competitive level.⁴ Economic theory shows that, in markets where the price is above the competitive level, free competition will tend to drive prices down as firms seek higher profits by lowering their prices to attract more customers. In addition, the efficiency gains resulting from increased competition will reduce costs, allowing even further price reductions. Whether deregulation produced higher or lower fares in any particular market would depend on (1) how much service passengers were willing to pay for and (2) what it cost the most efficient airline in that market to produce the desired service.

Predictions of lower fares did not mean that passengers would necessarily pay less after deregulation for the same trips they took under regulation. Inflation, expected fuel-cost increases, and aircraft replacement costs would likely cause fares to increase with or without deregulation. Rather, it was expected that deregulation would restrain fare increases, resulting in fares lower than they would be under continued regulation.

More price/service options with
lower average service quality

A fourth major prediction was that deregulation would broaden consumer choice in fares and service and would likely lower average service quality in the long run. These expectations were based on the ideas that (1) average service quality under regulation, in terms of flight frequency, load factor, and seating density, was probably higher than most passengers would choose if lower priced service options were available and (2) the freedom to compete in price and to enter any market at will would result in increased price competition, producing a range of price/service options.

In economic theory, competition in the long run produces a price equal to the cost (assumed to include a reasonable profit) incurred by the most efficient firm in a market. Because regulation inhibited price competition, some studies concluded that airlines had adjusted service up or down until cost equalled the regulated fare and that, in most major markets, this resulted in service inflation--improving service as a non-price method of competition until costs equalled the regulated fare. Consequently, these studies concluded that the resulting service levels under regulation were higher than passengers would choose if lower price/lower service options were available.

⁴A competitive price level provides only a reasonable profit--the minimum profit needed for an efficient firm to remain in the market.

Regulation severely limited the price/service options available, constraining all the airlines in any particular market to about the same price. As airlines adjusted service levels to the price that could be charged, service levels as well tended to be about the same on all airlines. Because deregulation allowed airlines to trade off lower fares and better service--such as flight frequency and seating comfort--competition was expected to produce varying fare/service combinations in response to consumer preferences. For example, airlines might offer reduced service quality such as advanced purchase requirements and less popular travel times at a lower price to passengers more sensitive to price differences than to service, such as vacation travelers. In some markets, airlines might also offer higher service/high fare combinations to business travelers for whom service quality tends to be more important than price. The ultimate effect expected was that airlines would compete in both price and service, thereby offering a wider selection of price/service options.

Assuming that deregulation would provide consumers with a choice in price/service combinations, most analysts believed that enough people would choose a lower priced/lower service option than had existed under regulation, so that the average price/service option would be lower. By lower service they were suggesting that load factors would rise, seating density would increase, and flight frequency might decline.

Not all studies, however, predicted that flight frequency would be lower under deregulation. One study⁵ in particular noted that lower fares by intrastate airlines had increased the demand for air travel enough that the number of flights increased. This study concluded that the experience of intrastate airlines suggested that the number of flights could rise after deregulation.

Because the airline industry is diverse, service and price changes would vary by market. Some analysts believed that regulation might have impaired service to smaller markets with fewer passengers. Regulated fares were set according to distance and in these markets they might not have been high enough to cover costs if airlines provided the same service that they supplied to markets with more passengers. Thus some analysts believed that airlines had reduced flight frequency to smaller markets under regulation, and that deregulation would tend to improve flight frequency in these markets. However, it was expected that smaller airlines using smaller aircraft might replace the major airlines in some smaller markets.

⁵Theodore E. Keeler, "Domestic Trunk Airline Regulation: An Economic Evaluation," Study on Federal Regulation (appendix to vol. VI, Framework for Regulation), Committee on Governmental Affairs, United States Senate, December 1978, pp. 121, 124, 125.

Expecting that airlines would abandon some markets in the search for higher profits, many people who testified at deregulation hearings were concerned about loss of service for small communities. In response, the Congress created the Essential Air Service Subsidy Program, which assures service to eligible communities⁶ through 1988.

Profit

Although there was no clear expectation that increased competition would raise or lower aggregate industry profits in the long run, deregulation was expected to increase opportunities for individual airlines to earn profits by allowing them to decide their service and fares. As under regulation, no airline was assured a profit. Considerable short-run losses would be possible as airlines adapted to deregulation. Airlines best able to contain costs and attract passengers would be most likely to succeed. Others might lose money or go out of business. Established airlines with labor agreements, aircraft, and operating styles developed under regulation might have to lower costs to compete with new airlines lacking those constraints.

Timing

As discussed above, many expectations of deregulation's long-run effects were clear; nevertheless, industry analysts did not know how quickly these effects would take place. For example, it was not known how quickly new airlines would form or existing airlines would change their route structures. Short-run changes might differ from long-run expectations. For example, fare reductions might be greater in the short run. Airlines entering a new market might temporarily lower fares below the competitive level or even below break-even to establish an identity in the market. Some changes would occur only after airlines purchased new aircraft or signed new labor contracts.

Other factors affecting the airline industry

In addition to deregulation, three other major factors have affected the industry since 1978: slow economic growth, fuel-price increases, and flight restrictions following the air traffic controllers' strike. Because of the industry's sensitivity to each of these factors, their simultaneous occurrence during this period clouds the effects of deregulation.

Air travel, which is sensitive to general economic conditions, generally follows changes in gross national product (see

⁶Eligible communities were those listed on the routes of CAB certificated airlines on the date of the airline deregulation act (Oct. 24, 1978), and communities that lost all air service in the 10 years preceding the act.

app. XXIII). The number of passengers fell in 1980 and 1981 as two recessions reduced the demand for air travel.

Rapid fuel-price increases forced airlines to increase fares, thus partially offsetting the price-dampening effects of increased competition. Operating costs rose as fuel prices increased 90 percent in constant dollars from 1978 to 1981. Average fares rose in 1980 and 1981 (see app. III), reducing the demand for air travel.

Limits on the number of flights at major airports prevented airlines from taking full advantage of deregulation. Following the 1981 air traffic controllers' strike and the subsequent firing of about 70 percent of the controllers, the Federal Aviation Administration (FAA) limited flights at 22 large airports and restricted airlines from adding new flights at others. Airlines that had concentrated their flights at restricted airports were hurt more than others. United Airlines, for example, grounded 20 percent of its fleet. According to CAB, the flight quotas significantly affected air service to small communities because flights to connecting airports were reduced. Small communities around Chicago, Denver, Los Angeles, and St. Louis were most severely affected. Although strike-related limits have been removed, pre-strike limits continue at New York's Kennedy and LaGuardia airports, Chicago's O'Hare, and Washington National because of runway and terminal congestion.

OBJECTIVES, SCOPE, AND METHODOLOGY

On January 26, 1984, the Chairmen of the House Committee on Public Works and Transportation and its Subcommittee on Aviation asked us to update through 1983 our airline industry status reports. These reports examined the industry's status (traffic trends, fares, profits, productivity, service, and safety) before and after the airline deregulation act, without assessing deregulation's effect. Based on subsequent discussions, we agreed to update our reports through 1984 where that data were available and analyze how industry changes relate to economic expectations of deregulation's impact. We also agreed that a review of deregulation's effect on safety was beyond the scope of this report.

We conducted an economic analysis to assess whether industry changes were consistent with analysts' expectations of deregulation's impact. These analysts were primarily economists and financial analysts (see app. IV). Their expectations of deregulation's effects were based on widely accepted principles of microeconomics and industrial organization theory.

We used a standard economic approach consisting of analyzing the industry's structure, conduct, and performance.

--Structure, discussed in chapter 2, is generally the number of airlines in the industry, each airline's share

of traffic, and the ease with which they can enter markets.

--Conduct, discussed in chapter 3, is the way airlines set prices and levels of service.

--Performance is the profitability of the industry (ch. 4), how efficiently the industry uses its resources to provide service (ch. 5), and how responsive that service is to consumer preferences (ch. 5).

Because structure and conduct interact to determine ultimate economic performance, the three elements provide a framework for assessing whether and how deregulation has promoted economic efficiency in the airline industry.

Our review covered the domestic passenger airline industry through 1983. We analyzed industry structure, traffic, service patterns, fares, productivity, and profits. We provided preliminary 1983 statistics compiled at CAB to the committee and subcommittee on May 4, 1984 (B-197119, RCED-4-83). Other reports⁷ discuss essential air service and consumer protection. While our analysis and conclusions are based on 1983 data, we have inserted in the text the 1984 data that were available at the time the report was being prepared. The 1984 data are generally consistent with trends established through 1983 and have given us no reason to alter our conclusions.

We conducted our review at CAB and DOT headquarters in Washington, D.C., between January 1984 and April 1985. We reviewed pertinent legislation and regulations, CAB staff studies and reports, studies by the Congressional Research Service, Congressional Budget Office, and the Office of Technology Assessment, and academic and private-sector analyses. We interviewed officials at CAB and the Air Transport Association (an industry trade association).

Since much of our analysis is based on data from CAB computer files, we met with CAB officials and reviewed system documentation for their form 41 report data base. This CAB report compiles 58 detailed schedules of financial, traffic, and operating statistics submitted quarterly⁸ by each certificated airline. Since time constraints prevented our doing an extensive

⁷More Flexible Eligibility Criteria Could Enhance the Small Communities Essential Air Service Subsidy Program (GAO/RCED-83-97, May 18, 1983) and Legislation Needed to Clarify Future of Consumer Protection and Federal Preemption After the Civil Aeronautics Board Sunsets (GAO/RCED-84-154, June 13, 1984).

⁸Airlines submit some schedules monthly or annually.

reliability assessment, our review does not assure that CAB's computer output is completely accurate. However, we did not find any weaknesses in CAB procedures and controls that would result in erroneous data.

Unless otherwise noted, we group airlines according to CAB's service-related terms: trunks, local service, charter, and commuter (see glossary). Because service changed under deregulation, CAB in January 1981 adopted new categories based on operating revenues. The new groups are majors, nationals, and large and medium regionals. In our analysis of trends, we grouped airlines into the old categories even if they no longer provide service identified with that category. This was done to provide a means to compare the industry as it was before deregulation with its status in later years.

At the request of the Chairmen of the House Committee on Public Works and Transportation and its Subcommittee on Aviation, we did not obtain agency comments on this report. With this exception, our work was performed in accordance with generally accepted government auditing standards.

CHAPTER 2

THE INDUSTRY IS MORE COMPETITIVE

Analysts expected deregulation to result in a more competitive market structure by removing barriers to entry into individual markets and allowing new firms to enter the industry. Because the market can be broadly defined as the entire industry or narrowly defined as an individual city-pair, this chapter looks at various levels of market structure, including the number of airlines, industry-wide market shares, route changes, and the number of city-pairs served by competing airlines. Chapters 3, 4, and 5 analyze how changes in structure affected fares and service, profits, and industry performance. After deregulation, the number of airlines and the number of markets served by two or more airlines increased. While the former trunk airlines still dominate the industry, smaller and new airlines almost doubled their share of traffic from 1978 to 1984. New service and route changes by existing airlines brought competing air service to more markets.

Table 2.1 CERTIFICATED AIRLINES PROVIDING INTERSTATE SCHEDULED SERVICE				
Airline categories ^a	1978	Increase	Decrease	1984
Trunk	11	-	1	10
Local service	8	-	3	5
Other ^b	11	-	6	5
Intrastate	0	4	1	3
Charter	0	5	2	3
New airlines	0	17	6	11
Total	30	26	19	37
Source: CAB Air Carrier Traffic Statistics.				
^a Airlines are categorized as they would have been in 1978.				
^b "Other" is primarily Alaskan and Hawaiian airlines.				

THE NUMBER OF AIRLINES HAS INCREASED

According to CAB traffic statistics, the number of operating certificated airlines almost tripled from 1978-84, increasing from 44 to 114. Excluding all-cargo airlines, commuter airlines that became certificated but retained essentially the same service, and charter airlines that do not offer scheduled service, the number of airlines providing interstate scheduled service increased from 30 in 1978 to 37 in 1984. This increase of seven airlines is a net increase; 26 began new scheduled interstate service between 1978 and 1984, but 19 disappeared from CAB traffic statistics (most ceased operations due to financial problems [11] or mergers [7]). Of the 26 airlines providing new service, 4 were former intrastates, 5 were former charters, and 17 were new airlines.

The decrease in trunk and local service airlines shown in table 2.1 is due to mergers. Of the remaining decreases, three "other," the one intrastate, two former charters, and five new entrants ceased operating due to financial problems.

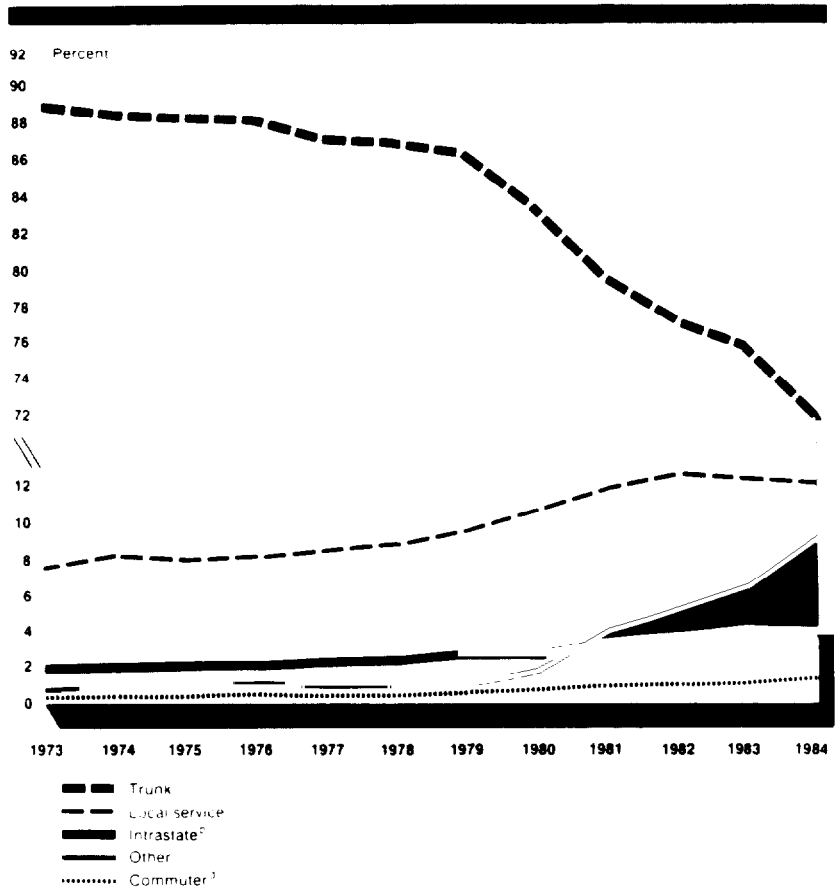
MARKET SHARES OF SMALLER AIRLINES ARE INCREASING

Although the former trunk airlines still dominate the industry in terms of revenue passenger miles (RPM)¹ and number of passengers carried, the trunks' market share (percentage of the industry's output) decreased every year from 1973 to 1984 (see fig. 2.1). The rate of decrease was faster after deregulation. From 1973 to 1978, the trunks' market share² declined from 89.2 percent to 87.2 percent, or an annual compound rate of -0.5 percent. By 1984, their share fell to 73.3 percent, for an annual compound rate from 1978 to 1984 of -2.9 percent. Since 1978, the category "other," which includes new airlines, gained much of the market share lost by the former trunks.

¹Revenue passenger-miles is a measure of traffic based on the number of miles each paying passenger is flown.

²To analyze long-term trends in market share, we grouped airlines according to the categories that existed when deregulation began: trunks, local service, intrastate, commuter, and other. However, many airlines no longer provide the service suggested by their old category. For example, USAir was a local service airline, but its service today is more typical of a trunk airline. If we were to classify USAir as a trunk airline in 1984, then the decline in trunk airlines' market share from 1978 to 1984 would be a little smaller. Similarly, Air California was an intrastate airline but its service is now interstate and more similar to a local service airline.

Figure 2.1: Changes in Market Share of Traffic¹ by Airline Category, Calendar Years 1973-1984



¹Represents revenue passenger miles for domestic scheduled certificated and commuter carriers

²Represents newly certificated former intrastate carriers

³Includes all domestic scheduled certificated carriers other than trunks, locals, and certificated former intrastate and commuter carriers

⁴Includes newly certificated former commuters

Although smaller airlines are increasing their market shares, large airlines still dominate industry traffic. In 1984, the largest four airlines accounted for 54 percent of RPM; the largest 15 airlines accounted for 89 percent.

<u>Year</u>	<u>Trunk</u>	<u>Local Service</u>	<u>Intrastate</u>	<u>Other</u>	<u>Commuter</u>
-----percentage-----					
1978	87.2	8.8	2.4	1.1	0.5
1984	73.3	12.2	3.9	9.1	1.5

^aBased on revenue passenger-miles

AIRLINES HAVE CHANGED THEIR ROUTES

After deregulation, airlines made major changes to their route structures, leaving some markets and entering new ones. Because airlines changed an average 60 percent of their nonstop routes between 1978 and 1983, many markets are now served by different airlines. Large airlines left many short-haul routes and shifted their larger aircraft to longer, more heavily traveled markets. Smaller airlines began service on some abandoned short-haul routes and expanded into longer haul service. For example, the former intrastate airlines expanded into neighboring states, while commuter airlines moved into the less traveled, short-haul markets.

<u>Year</u>	<u>Number of airlines</u>	<u>Passengers carried (millions)</u>	<u>Revenue passenger miles (billions)</u>	<u>Airports served</u>
1978	228	11.3	1.36	681
1984	203	26.1	4.17	853

Source: Regional Airline Association.

Commuter/regional airlines³ are a rapidly growing segment of the industry (see table 2.3). Although these airlines decreased in number from 1978 to 1984, the number of passengers carried increased 15 percent annually and revenue passenger miles increased 21 percent annually. Short-haul markets abandoned by jet operators were the major source of growth.

The tendency for large airlines to withdraw service from smaller communities may be a short-run adjustment to deregulation, and thus not necessarily a long-run trend. In the short run, airlines may shift service to markets best suited to their existing aircraft. For large aircraft, this means long distance and/or heavily traveled markets. But, in the long run, airlines may buy new aircraft suited for markets they want to serve, which can include shorter, less traveled markets. Thus the airlines' current aircraft heavily influence short-run route changes, while development of an integrated route network may have greater influence on long-run route strategies and aircraft mix. For example, United Airlines reinstated service to several smaller communities because it wanted their traffic feeding into its system. Other large airlines are buying aircraft better suited to short-haul routes.

Along with route changes came greater emphasis on hub-and-spoke operations, where an airline channels much of its traffic through one or a few "hub" airports. Because each route from the hub airport is a spoke in the system, an airline needs far fewer flights to serve its markets than direct, point-to-point service entails. Appendix V shows the growth of hub operations by major airlines.

MORE MARKETS ARE SERVED BY COMPETING AIRLINES

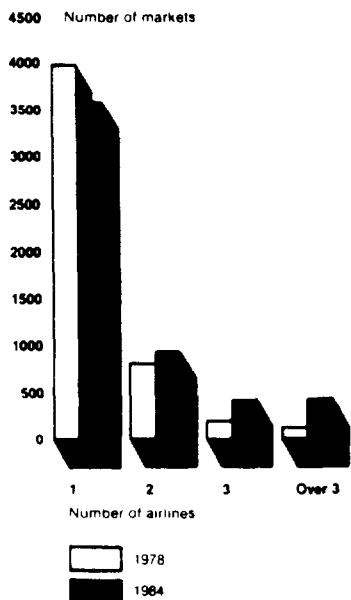
We looked at the number of airlines serving markets as one indicator of the state of competition. In tabulating airlines, we restricted our review to markets where one or more airlines provide through-plane service, i.e., a passenger stays on the same plane from origin to destination although the aircraft may stop en route. We excluded connecting service, which is competitive with through-plane service in some markets, because of the difficulty in identifying all the connecting service possibilities and determining which are realistically competitive with through-plane service. By excluding connecting service, however, we understate the amount of competition and passenger choice in some markets.

³Commuter airlines were defined as those that operated non-jet aircraft with 60 seats or fewer. When the CAB changed its airline categories in 1981, commuter airlines fell under the new term "regionals," which generally comprises short-haul airlines.

Although most through-plane markets continue to be served by one airline, more are now served by competing airlines (see fig. 2.2). Markets served by two or more airlines increased from 1,180 (23 percent of total) in 1978 to 1,831 (34 percent of total) in 1984, while those served by one airline decreased from 3,978 (77 percent of total) to 3,592 (66 percent of total). (See app. VI.)

Looking at the number of passengers within each market shows that most people travel in multi-airline markets. Based on first quarter 1984 data, 1 percent of passengers travel in the 3,592 markets served by one airline, while 97 percent of passengers travel in the 446 markets served by four or more airlines.

Figure 2.2: Number of Markets with Competing Airlines



To see how competition in individual markets changed, we compared the 5,158 markets that had through-plane service in 1978 with their status in 1984 and found that

- 1,567 (30 percent) had no change in the number of airlines,
- 1,185 (23 percent) had more airlines in 1984,
- 291 (6 percent) had fewer airlines in 1984, and
- 2,115 (41 percent) no longer had through-plane service in 1984.

Another 2,380 markets had no through-plane service in 1978 but were receiving it in 1984.

POTENTIAL COMPETITION AFFECTS ALL MARKETS

According to economic theory, a single firm operating in a market invites entry by a competitor if it is inefficient, charges too high a price, or fails to provide the price/service options consumers want. While entry of a competitor forces the existing firm to become efficient and more responsive to consumer preferences in order to survive, economic theory holds that potential competition--the realistic possibility of entry by a competitor--may be sufficient to produce performance similar to that of competing firms. The report of the CAB special staff on regulatory reform concluded that the most important effect of regulatory protection on the performance of the airline industry was probably its limitation on the effectiveness of potential competition, which could be expected to be a reliable check on any tendency to inefficient performance.

Route deregulation thus created the potential for competition, which may affect fares and service in markets without direct head-to-head competition between two or more airlines. Because deregulation allows airlines to readily enter markets, an airline with no current competitors in a particular market may choose not to set fares substantially above the level that competition would produce. If it did, its higher prices would give other airlines an opportunity to enter that market and attract passengers by charging a lower but still profitable price. While the power of potential competition to keep fares below the level a single airline could charge is accepted economic theory, how effective it is in lowering fares all the way to the competitive level is a subject of theoretical debate; the evidence is mixed.

CONCLUSIONS

Consistent with economic expectations, the airline industry has become more competitive since deregulation. The number of airlines offering interstate scheduled service increased. The long-term decline in market share of the former trunk airlines continued after deregulation but at a faster rate as new and smaller airlines carried a larger portion of airline passenger traffic. Route changes and new service increased markets with through-plane competitive service by 55 percent (from 1,180 to 1,831). Because deregulation allows airlines to enter markets at will, potential competition can encourage efficiency and price/service options responsive to consumer desires even in markets that continue to be served by one airline. Using the route flexibility deregulation allowed, airlines changed the service they provided. Former intrastate airlines now offer interstate service; former local service airlines now offer longer haul service. Trunk airlines discontinued some service

to smaller communities, often to be replaced by commuter airlines offering scheduled service. In the long run, trunk airlines may reverse their declining market share through various strategies, such as altering their size mix of aircraft, to retain and build feeder traffic from small communities.

CHAPTER 3

AIRLINE COMPETITION HAS BROUGHT LOWER FARES

AND BETTER SERVICE TO MOST PASSENGERS

Deregulation increased the ways airlines can compete by increasing their ability to alter route structures, service offerings, and fares to attain the maximum competitive advantage. Observed shifts in fares and service are generally consistent with analysts' expectations of what would occur during a transition from a regulated to a more competitive market. Actual or potential competition brought downward pressure on many fares that now appear to be lower than they would have been under regulation and more closely related to costs. As measured by departures,¹ available seats, and numbers of markets with nonstop service, air service has improved since deregulation, particularly for large communities or heavily traveled markets. Air service shifts among cities are producing a more efficient allocation of airline resources, although 114 small communities lost scheduled air service and 410 markets are no longer served with jet aircraft.

AVERAGE FARES ARE LOWER AND APPEAR MORE RELATED TO COST

The industry's average fare per RPM in constant (inflation-adjusted) dollars continued to fall after deregulation. Studies using market categories indicate that average fares are generally lower since deregulation and appear to be more cost-based. These changes benefited most but not all passengers.

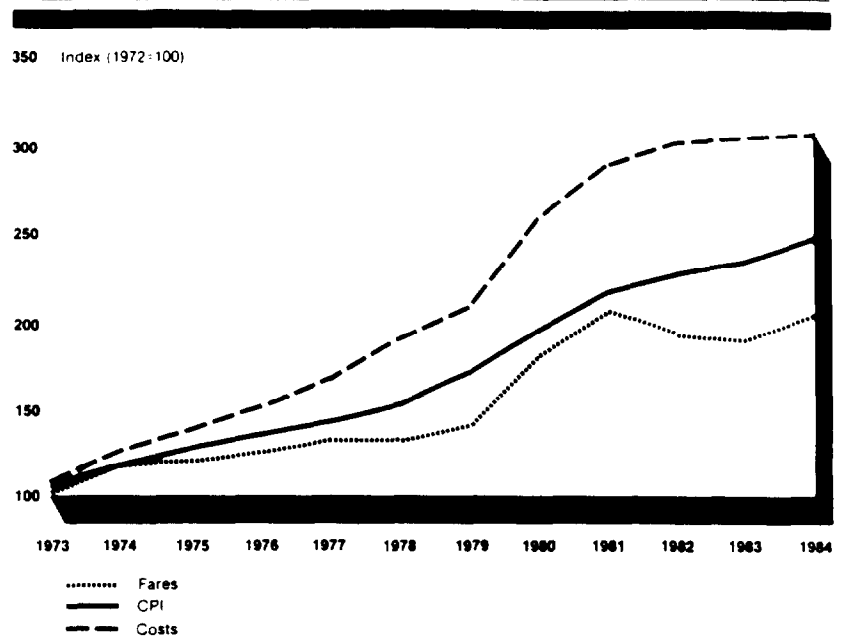
Average fare fell

Economic theory suggested that the ability of lower cost firms to enter markets and compete on the basis of price would create downward pressure on fares. For example, a 1977 GAO study² of airline costs and fares from 1969 to 1974 found that increased competition would have encouraged greater efficiency, such as putting more seats on each aircraft and filling more of the seats available on each flight. With the resulting lower per-passenger cost, average fares could have been lower.

¹Flights and departures are different measures of service. If an airplane flies from point A to point B to point C, it has made two departures (one at A and the other at B) and three flights (A to B, A to C, and B to C).

²CED-77-34, February 18, 1977.

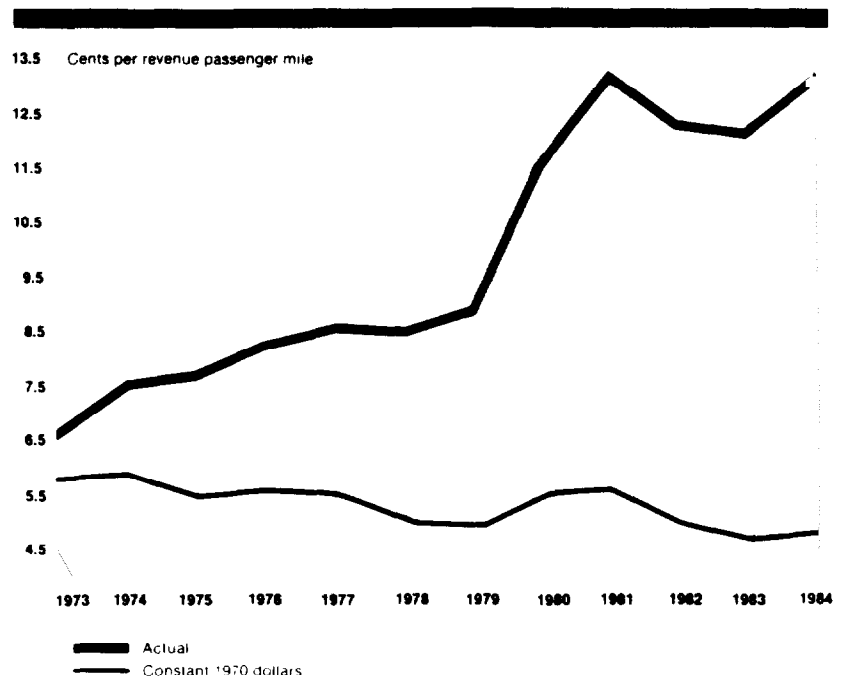
Figure 3.1: Fares, Costs,^a and CPI^b



^aCost data from Air Transport Association

^bConsumer Price Index

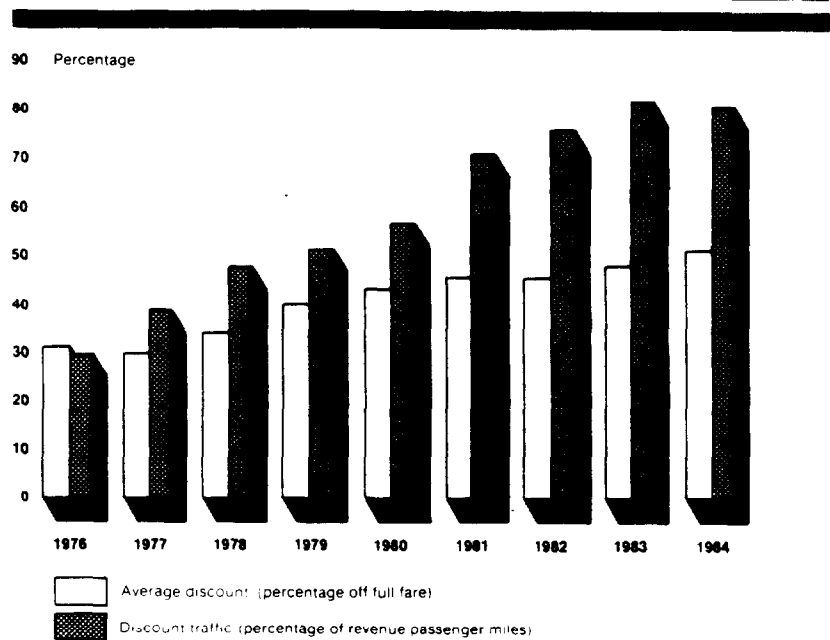
Figure 3.2: Average Fare



In constant dollars, the average fare per RPM fell by 6 percent between 1978 and 1984³ despite increases in airline costs that surpassed the general inflation rate (see figs. 3.1 and 3.2). Average fare increases in 1980 and 1981 were partially caused by sharp increases in fuel prices, which surpassed the general inflation rate. As fuel prices dropped in 1982 and 1983, the average fare fell below its 1978 level.

Growing use of discount fares is one reason that the average fare fell. The ability of actual and potential new airlines to offer lower fares forced the established airlines to offer substantial discounts. Air Transport Association (ATA) data (see fig. 3.3) show that travel on discount fares increased each year through 1983, rising from 39 percent of RPM in 1977 to 82 percent in 1983 before falling slightly to 81 percent in 1984. The average discount from full fare increased from 30 percent in 1977 to 51 percent in 1984. Discount statistics in 1977 were probably high relative to 1974-76 due to CAB's relaxation of fare regulation in early 1977.

Figure 3.3: Discount Traffic.
Major Airlines



Source: Air Transport Association

³The consumer price index was used as the measure of inflation. In actual dollars, the average fare rose 52 percent. Airline costs and the consumer price index increased even more (see fig. 3.1 and app. VII).

Consistent with economists' expectations, fare changes varied in individual markets. The average fare is an aggregate from all markets. Fares rose or fell in each depending on such things as the number of people traveling, distance, costs, and the amount of competition.

Regulated fares were above
or below cost in many markets

Air fares were historically set below cost in short-haul and lightly traveled markets and above cost in longer haul and more heavily traveled markets. When the airline industry was developing, CAB believed that short-haul passengers would not travel by air if they had to pay the full cost of service. Thus, in keeping with its legislative mandate to promote and develop the air transportation system, CAB believed that short-haul fares should be set below cost, with the loss made up by charging fares above cost in longer haul markets.

In 1969 CAB designated a mileage-based formula to set fares with decreasing rates per mile as the distance increased. This formula continued the practice of setting fares below cost in some markets and above cost in others because it did not (1) reflect the degree to which cost per mile declines with distance and (2) take into account other cost differences. In 1974 CAB analyzed the fare formula's effects and found that fares were below cost up to approximately 595 miles. Passengers traveling 100 miles paid less than 70 percent of cost, while those traveling 1,300 miles or more paid about 9 percent above cost. Although fares set by the formula varied only according to distance, distance is not the only determinant of cost. Per-passenger cost is also affected by load factor, the number of seats on each aircraft, the operating cost of the aircraft used, and the service quality provided.

In 1974, after a lengthy investigation of passenger fares, CAB concluded that cross-subsidies should end and fares should reflect costs. However, it delayed a complete adjustment because of uncertainty about the effect on short-haul traffic. Thus a new CAB formula⁴ in 1974 reduced, but did not end, cross-subsidies. Fares remained below cost up to 500 miles

⁴The formula set standard (coach) fares; however, CAB allowed limited discounts and permitted local service airlines to charge above the formula level. The study that led to this formula was called the Domestic Passenger Fare Investigation and the formula is known within the industry as the DPFI formula. Rates were set at \$12 plus 6.75 cents per mile (0-500 miles); \$12 plus 5.15 cents per mile (501-1,500 miles); and \$12 plus 4.95 cents per mile (1,501 miles and over). CAB later approved increases to the fixed charge and the variable mileage rate as airline costs increased.

(e.g., 23 percent below at 100 miles) and above cost at 500 or more miles (e.g., 2.4 percent above at 2,800 miles). Other than general fare level increases due to rising costs, no further changes were made before CAB began administratively deregulating the industry in 1977.

The historical cross-subsidy policy resulted in some communities getting air service they otherwise would not have. The fare formula benefited passengers in short-distance or lightly traveled markets because they generally paid fares below the cost of the service they received. Passengers in long-distance or heavily traveled markets generally paid fares above cost.

Economists believed that allowing airlines to freely set their prices would result in fares based more on total cost per passenger rather than distance alone. Markets where fares had been set above cost would attract new competitors and fares would fall. Fares would have to rise in markets where they had been set below cost or airlines would shift their service to more profitable markets.⁵ Thus long-haul fares would be expected to decrease relative to short-haul fares.

Fares appear to be more closely related to cost

Analyses of deregulated fares in different types of markets show that fares may be more closely related to per-passenger cost than they were under the CAB fare formula used from 1974 to 1977. A CAB study⁶ compared deregulated fares with the 1974 fare formula (adjusted for cost increases) in various types of markets. Although no one can know what fares would be today if regulation had continued, the adjusted fare formula is a benchmark for assessing how fares have changed since deregulation. (See app. VIII for a discussion of using the fare formula as a benchmark.) The study found that 1983 fares relative to the adjusted formula were lower in long-distance markets than in short-distance ones. It also showed that fares are lower in highly traveled markets than in lightly traveled ones. These results reflect expected changes as fares fell more in markets where the CAB formula had set fares above cost than in other markets where the formula set fares below cost.

⁵As suggested in chapter 1, in markets where CAB set fares below cost at an assumed service level, airlines may have reduced service and costs under regulation. Therefore, deregulation might have led to service improvements as well as fare increases in these markets.

⁶Implementation of the Provisions of the Airline Deregulation Act of 1978. (Civil Aeronautics Board Report to Congress, Jan. 31, 1984, pp. 24-25).

The CAB study compared average 1983 fares paid in nonstop markets to fares determined by the CAB's 1974 formula, adjusted for cost increases. Because the fare structure and extent of discounting CAB approved varied over 40 years of airline regulation, no single fare structure can represent CAB's changing regulatory policy. We believe, however, that the fare formula adopted in 1974 (with later revisions for cost increases), as the most recent formula in effect before CAB began administratively deregulating the industry in 1977, represents the fare structure most likely to be in effect now had deregulation not begun in 1977.

While this fare formula was being used, local service airlines were allowed to levy surcharges of up to 30 percent, while some discounting on other flights was permitted. The actual fares charged, therefore, were not equal to those specified by the fare formula--actual fares were higher than formula fares on some short-haul flights (due to surcharges by local service airlines) and lower than formula fares on some other flights, particularly long-hauls, due to discounting. All the information available to us, however, indicates that the extent of discounting and surcharging was quite limited between 1974 and 1977; we therefore believe that the formula fares are a reasonably accurate representation of the fare structure in effect from 1974 through February 1977.

CAB compared actual average fares to adjusted formula fares in 12 categories of markets, which varied by distance and number of passengers. Actual fares were based on the year ending June 30, 1983. CAB's study (see table 3.1) shows that fares were lower relative to formula fares as distance increased (except in the 501+ passengers-per-day category) and as the number of passengers increased. Fares were higher than the formula level in (1) markets of 400 miles or less and with 200 or fewer passengers per day and (2) markets of 401-1500 miles and 50 or fewer passengers per day. These results are consistent with economists' expectations. Fares were higher relative to CAB's formula in short-distance markets where the formula had set fares below cost, and fares were lower relative to the formula in long-distance markets where the formula set fares above cost. Also, fares were higher than formula fares in lightly traveled markets where load factors were probably below the constant average load factor assumed in the formula, and were lower in heavily traveled markets where load factors were probably above that used in the formula.

On the basis of our analysis of CAB's study, we conclude that fares are probably more closely related to costs under deregulation than they would have been under continued use of CAB's fare formula. However, results of CAB's study may overstate the degree to which fares have moved closer to costs because (1) actual fares also deviated from the fare formula under regulation, and thus were closer to costs than formula

Table 3.1 ACTUAL FARES AS A PERCENTAGE OF ADJUSTED FORMULA FARE Year ended June 30, 1983 CAB			
Number of passengers per day ^a	Market distance (miles)		
	1-400	401-1500	1501+
10-50	114	110	b
51-200	112	97	75
201-500	95	87	65
501+	71	80	60
^a Origin and destination passengers ^b Too few markets to provide reliable comparison Source: CAB.			

fares, and (2) CAB's study does not reflect probable changes in the cost structure under deregulation.

The existence of some surcharges and discounts from the formula fares suggests that actual fares under regulation were somewhat closer to costs than were the formula fares. However, we believe that the deviation between 1983 actual fares and the formula fares shown by CAB's study is significantly greater than the deviation that existed under regulation.

Since lower fares on long-distance flights probably increased load factors, thus reducing the average per-passenger cost on these flights, the cost structure under deregulation is somewhat different from what it was under regulation. Thus lower actual fares relative to formula fares in long-distance markets may be partially the result of lower costs in these markets.

In summary, the pattern of actual 1983 fares relative to formula fares shown by CAB's study is consistent with economists' predictions about how fares would change, on the basis of the industry's cost structure before deregulation. Thus we believe deregulated fares are closer to costs, although we recognize that the results of CAB's study probably overstate how far fares have moved in this direction.

Hub size is not a major
determinant of fare changes

Because of congressional and public concern about how fares changed in different-size communities, we asked CAB to calculate its fare data categorizing markets by the hub classification⁷ of the communities at each end of the trip, which approximates community size. We asked CAB to use actual fares from the second quarter of 1983 and to calculate fares under the adjusted 1974 fare formula using the same method CAB used in its study. A detailed description of our methodology and assumptions appears in appendix VIII.

Our analysis of these data found that the average fare was lower than the formula fare in all but one of our market categories, the one exception being medium-distance small communities--a category that contained only four markets and less than one-tenth of one percent of all passengers. Average fare was lower than the formula fare even in short-distance markets where CAB's formula had set fares below cost. This may indicate that the cost of serving short-distance markets decreased. New, lower cost airlines and the shift to smaller, more efficient aircraft for short-distance flights may account for this finding. This does not, of course, mean that fares were lower for each community in these categories. There was substantial variation in the average fare relative to the formula level, particularly in the small-community categories. Many small-community markets had average fares higher than the formula, even though the average for these markets was lower. For example, 28 of the 52 markets between small communities, which include about 48 percent of the passengers in that category, had average fares above the formula level. Our analysis also found that fares in medium-distance markets were higher, relative to the formula, than fares in short-distance ones. Fares were closest to the formula level for trips of 1200 miles or fewer between small communities and medium or large communities. The overall ratio for all 1,552 markets, weighted by passengers in each market, was 84 percent.

Comparing CAB's results with ours indicates that the number of passengers traveling in a market has more effect on fares than does community size. CAB's study found a pattern of fares

⁷CAB classifies communities as large, medium, or small hubs on the basis of on the percentage of total domestic passengers boarding a plane at that location. If more than 1 percent of total passengers board a plane at a particular community, CAB classifies it as a large hub; from 0.25 to 0.99 percent, a medium hub; from 0.05 to 0.24 percent a small hub. Communities with shares below 0.05 percent are called nonhubs. Appendix XIV lists the communities in each hub category.

Table 3.2
ACTUAL FARES AS A PERCENTAGE OF FORMULA FARE
Second Quarter 1983
GAO

Size of origin and destination communities	Market distance (miles)		
	50-400	401-1200	1201+
Small & small	83 ^a	106 ^b	^c
Small & large/medium	93	96	73
Large/medium & medium	84	86	74
Large & large	78	91	71

^aThe results in this category, representing short-distance markets between small communities, were heavily influenced by one market (Billings to Great Falls, Mont.), which accounted for 16 percent of passengers in the category and had an unusually low ratio of 1983 average fare to the formula fare (38 percent). Because this one market had such a large influence on the results in its category, we recomputed the ratio of 1983 average fare to formula fares with the market excluded. The recomputed ratio was 92 percent, which is similar to the ratios obtained in short- and medium-distance markets between small and large/medium communities. In other categories we did not find markets with a large share of passengers and a ratio of average fare to the formula fare that differed significantly from the category average.

^bThis category contained only four of the 1,552 markets (compared with at least 28 markets in all other categories) and less than one-tenth of one percent of the passengers in all categories.

^cThere were no markets in this category.

Source: Data calculated by CAB at GAO's request.

decreasing relative to the formula as the number of passengers increased. Our analysis, however, found no such pattern as the size of the origin and destination hubs increased. Thus any size community could be part of some short-distance, lightly traveled markets in which fares may be above the adjusted formula level. And for some communities, the average fare for all markets of which it is a part could be higher than the adjusted formula level. However, groups of each community size in our study, including small ones, form enough markets where fares are lower than the formula level that the average fares for that community-size category are lower in every category but one.

This result is not surprising since airline costs per passenger are closely related to the number of people traveling in the market. Higher numbers of passengers help create high load factors which, in turn, spread operating costs over a larger number of passengers. This reduces per-passenger costs and allows lower fares. Carrying more passengers also allows the use of larger aircraft which, when load factors are high enough, also reduces per-passenger costs. Together, both studies show that fares relative to fares produced by the formula are lowest in long-distance markets for all categories of community size and number of passengers.

To summarize the major findings of these two studies, CAB's study found that fares on average are lower relative to formula fares in all but three market categories, on the basis of distance and the number of people traveling in a market. Those three categories represented lightly traveled, short- and medium-distance markets. Our analysis found that, on average, fares are lower than the CAB formula level in all but one category of distance and community size. Together, these studies suggest that fares overall are lower than they would have been if regulation had continued, assuming that CAB would have continued to regulate fares according to the 1974 fare formula, adjusted for cost increases.

Issues surrounding price differences

Because fares in certain long-distance markets are lower than fares for shorter routes, many witnesses at hearings on deregulation believed the fares they paid were discriminatory. Price discrimination occurs if differences in prices are unrelated to differences in cost. We did not analyze prices and costs in individual markets to determine whether price discrimination is occurring. However, our general research on fares and costs showed that analyzing fares by distance is not sufficient to prove the existence of price discrimination, since distance is only one of several cost factors. It is possible for per-passenger cost to be lower on a long-distance flight, enabling an airline to charge a lower fare without discriminating. For example, the cost per-passenger depends greatly on the number of passengers carried per flight. A long-distance flight aboard a large aircraft with 85 percent of the seats sold could cost less per passenger than a shorter flight on a smaller aircraft with fewer seats and only 55 percent of the seats sold. Thus one of the most frequent criticisms of deregulation--that it has resulted in discriminatory fares--is not supported by the evidence used, i.e., flight distance.

Our analysis of fares, which compared actual 1983 fares to fares determined by CAB's fare formula, adjusted for cost increases, proved neither that price discrimination exists nor that it does not exist. However, the evidence suggesting that fares may be more closely related to costs also implies that discrimination may be less prevalent than before deregulation.

Price discrimination questions have also arisen because fares often vary among passengers in the same market or on the same flight. Sometimes these price differences may be largely due to differences in cost. For example, airlines offer discounts to travelers who are willing to travel at less popular times. This practice, known as peak-load pricing, is designed to smooth out the peaks in travel experienced by the airlines over the day, the month, or the year. Smoothing out the peak can reduce airline costs because the cost of adding a flight at off-peak times is less than at peak-times. At off-peak times airlines need not expand their capacity to offer more flights. Other price differences, such as charging less to passengers willing to make advance reservations, are probably not related very much to cost differences.

CHANGES IN OPERATIONS HAVE GENERALLY IMPROVED SERVICE

Deregulation enabled airlines to more easily leave unprofitable markets where there was less demand for their services and enter ones with greater demand or ones that were better suited to their equipment and route networks. The resulting route changes and the shift to hub-and-spoke operations generally improved service, mostly in the larger markets. Since the number of travelers in larger markets exceeds those in smaller ones, service improved for most passengers. To determine whether changes in operations improved service, we looked at the availability of air service and then at two measures reflecting the quality of service: flight frequency and the number of passengers who have to change planes or airlines on a given trip. We did not review all aspects of service because many are difficult to measure and people value them differently.

Airlines offer flights to more markets

As airlines responded to increased freedom to enter and exit markets by changing their routes, they offered flights to a greater number of city-pair markets. These changes left some communities without scheduled service. Between October 1978 and October 1984, the scheduled air service network shrank from 632 cities to 541, as the number of nonhub communities with scheduled air service decreased by 91 (23 communities gained service during the period while 114 lost service). Of the 114 nonhubs that lost service, 110 were not eligible for protection under the Essential Air Service Subsidy Program. The remaining four were eligible because they were certificated communities on the date of the deregulation act, but CAB determined that three had no essential air service and one community agreed to be served via a nearby community.

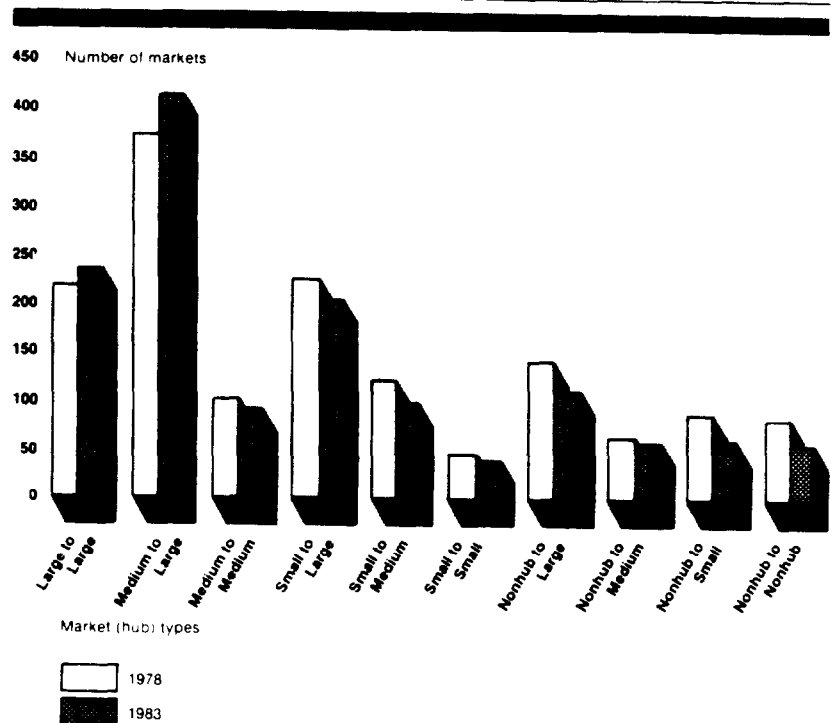
Loss of service is not unique to deregulation. In the 10 years preceding the deregulation act, 137 communities lost all air service from a certificated airline. While service shifts

may adversely affect people in a particular community, resources are used more efficiently when airlines pursue increased profits by shifting some of their limited resources from markets in which consumers generally place a relatively low value on air service to markets in which consumers place a relatively high value on additional air service.

The number of markets receiving nonstop service increased from 1,870 in 1978 to 1,947 in 1983 (see app. IX). Airlines withdrew this service from 394 markets and added it to 471 markets during this period. While the number of markets receiving nonstop service decreased by 2 percent among city-pairs for which at least one city is a small hub, the number of markets with nonstop service increased in all other market categories defined by origin and destination hub size, including markets between two non-hubs. Of the markets that had nonstop service in 1978, 79 percent continued to receive it in 1983.

While more markets have nonstop service, not all are served with jet aircraft. According to testimony at congressional hearings, passengers perceive jet travel as higher quality service than nonjet, based on speed, reliability, and safety. However, in some markets, not enough passengers are willing to pay fares that cover the cost of providing jet service. The number of markets with jet nonstop service decreased from 1,491

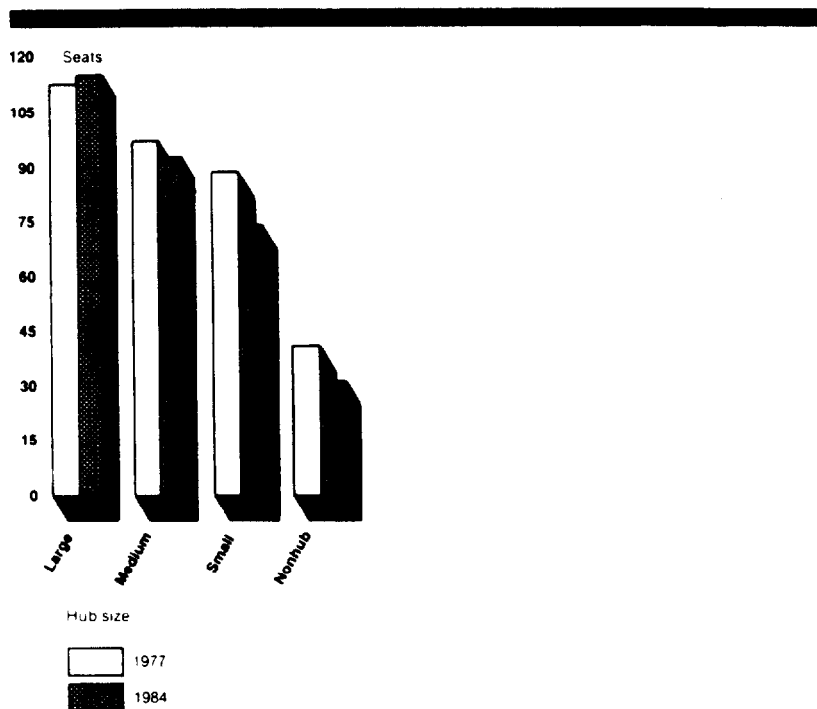
Figure 3.4: Nonstop Jet Service



in 1978 to 1,409 in 1983. Airlines withdrew jet service from 410 markets and added it to 328. All net increases were in markets between large hubs or between medium and large hubs (see fig. 3.4). Most losses involved nonhubs (see app. X). In this category, 188 markets lost service and 106 markets gained service. Overall, more than 75 percent of the markets with this service in 1978 still received it in 1983.

The ability of airlines to profitably operate jet aircraft increases with the number of people traveling in the market. We found that seats per departure (see app. XI) increased at large hubs, which have more passengers, and decreased at medium, small, and nonhubs (see fig. 3.5). This suggests that since 1977, airlines are flying larger aircraft out of large hubs and smaller aircraft out of medium, small, and nonhubs.

Figure 3.5: Seats Per Departure



A federal subsidy program protects air service to small communities. The Airline Deregulation Act guaranteed essential air service⁹ through 1988 to communities listed on the routes of certificated airlines on October 24, 1978 (the date of the act). This protected service at 555 small communities. As of February 1985, 142 communities were receiving subsidized

⁹The act directed CAB to decide what is essential air transportation for each eligible community.

service. Authorized funding was \$34.5 million annually, or an average of \$243,065 per community.

The fact that more markets had nonstop service in 1983 than had it in 1978 and fewer have jet service does not reveal how service quality has changed. For example, the service being provided may or may not be at convenient times or to desirable locations. This complicates the evaluation of service changes. To analyze changes in service quality, we looked at two major indicators: (1) numbers of departures, seats, and flights, and (2) how many passengers had to change planes or airlines to complete a trip.

Departures, seats, and flights increased

Flight frequency is a measure of service convenience. Travelers want a flight at or near the time of day they want to travel. The chances of getting such a flight are greater the higher number of departures and seats available. From 1977 to 1984, departures and seats increased 36 percent, mostly at large and medium hubs (see figs. 3.6 and 3.7). Declines in 1980 and 1981 (see app. XIII) may have been caused by reduced demand for air travel during the 1980 and 1981-82 recessions and by flight restrictions following the August 1981 air traffic controllers' strike. Between 1977 and 1984, departures and seats increased in 38 states and the District of Columbia¹⁰ (see app. XV). As shown in figures 3.8 and 3.9, departures declined in seven states and seats declined in nine (see app. XVI).

One of the economic expectations of deregulation was that service quality to some small communities would improve, at least in terms of flight frequency, as smaller airlines flying smaller aircraft replaced large airlines and aircraft. Among the small communities protected by the Essential Air Service Subsidy program, 162 are now served by commuter-type airlines, which generally use smaller, nonjet aircraft. Departures increased in 112 of these communities (see app. XII). While these passengers may no longer receive jet service, they have more convenient service in terms of increased numbers of departures.

Flights between hubs increased 14.3 percent between 1977 and 1984. The greatest increases were between

- medium and medium hubs (33.5 percent),
- medium and small hubs (25.5 percent),
- large and small hubs (22.2 percent), and
- large and medium hubs (22.1 percent).

¹⁰Excludes Alaska and Hawaii.

Figure 3.6: Departures Per Week

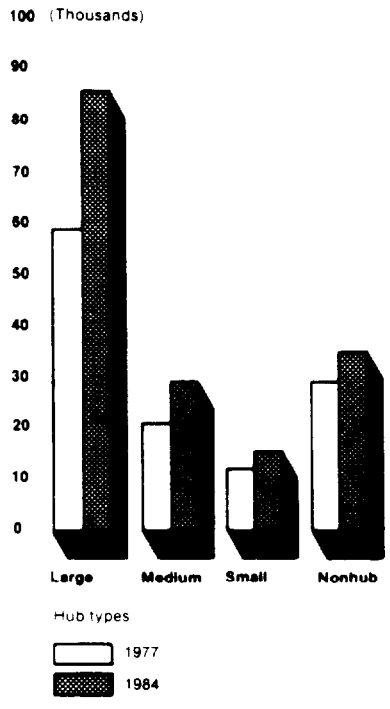


Figure 3.7: Seats Per Week

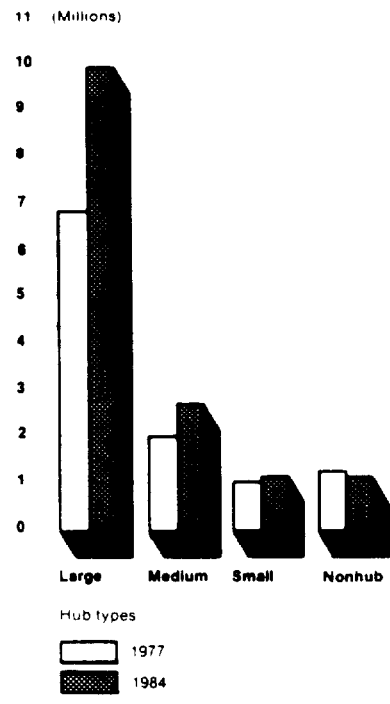


Figure 3.8: Weekly Departures, 1977-1984

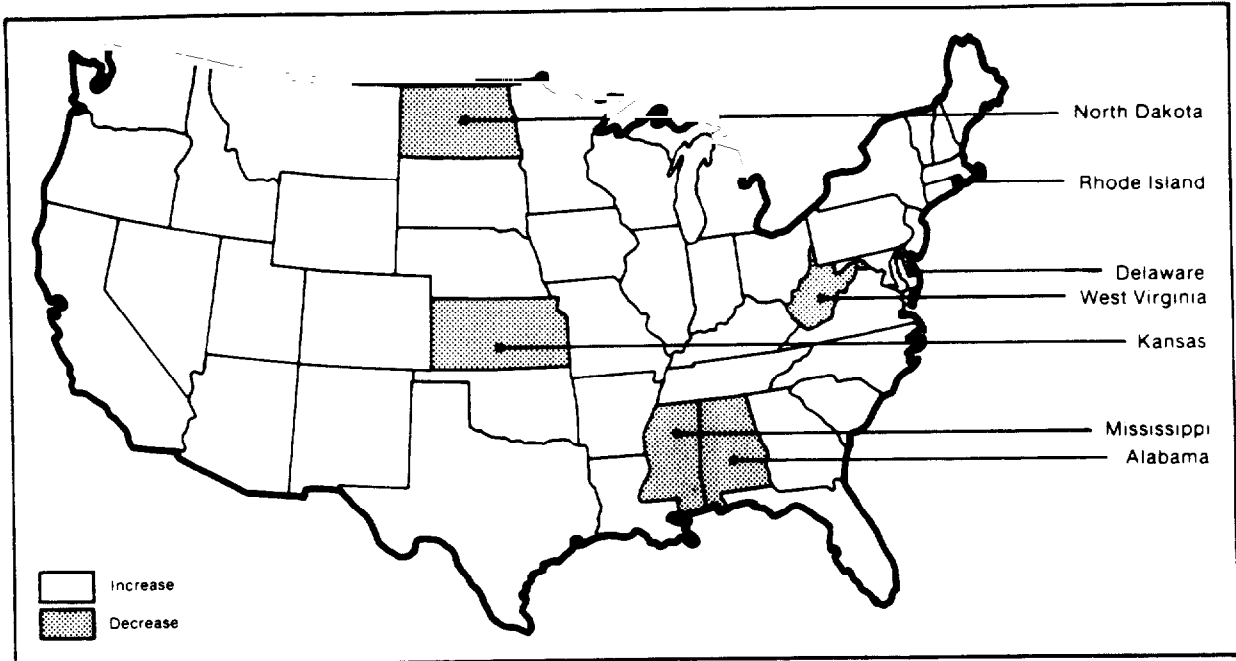
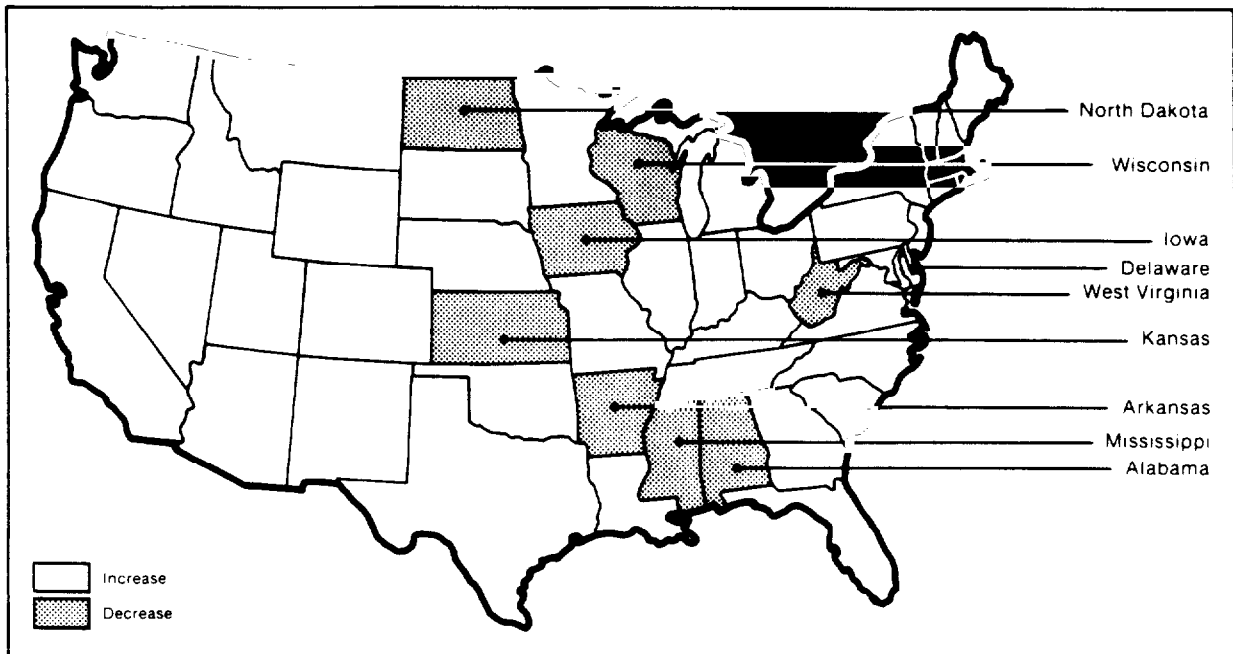
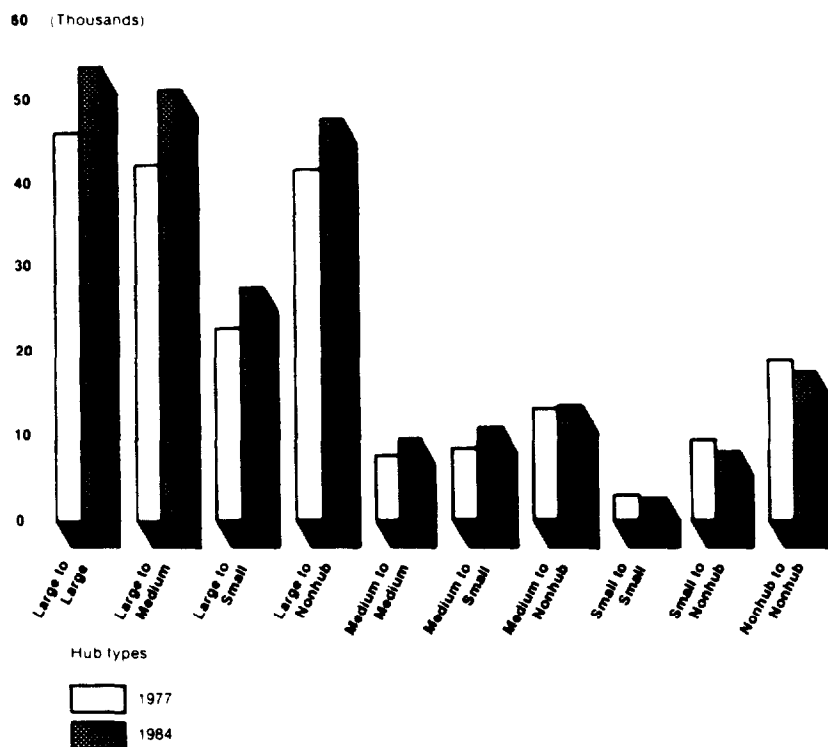


Figure 3.9: Weekly Seats, 1977-1984



Flights decreased between small and nonhubs (16.9 percent), between nonhubs (6.9 percent), and between small hubs (2.9 percent). (See fig. 3.10 and app. XVII.)

Figure 3.10: Flights Between Hubs



Fewer passengers have to change planes or airlines

Convenience also improved as fewer passengers had to change planes or airlines to complete their trips. Passengers prefer staying on the same plane, even if it makes intermediate stops. If they must change planes, passengers prefer staying with the same airline to reduce chances of missing the connecting flight or losing their luggage, and to avoid shuttling between terminals at large airports. From 1978 to 1983, the percentage of passengers staying on the same plane rose slightly from 73 to 74.7 percent while the percentage staying on the same airline rose from 89.1 to 96.7 percent. Of the passengers who had to change planes in 1978, 40 percent also had to change airlines. In 1983 this declined to less than 15 percent. Hub-and-spoke operations are partly responsible for these service improvements. They increased the markets where single-airline service (as opposed to multiple-airline connections) was available;

further, the hub airport offers passengers more connecting opportunities on a single airline.

CAB study suggests that travel convenience has improved

In general, increases in available flights and seats are likely to mean increased convenience for passengers with respect to their ability to travel at their most desired times. CAB studied changes in travel convenience since deregulation and found that convenience improved on average, although it has worsened for some travelers.

CAB looked at convenience in terms of (1) how close to a passenger's preferred time of day a flight was scheduled to arrive, and (2) flight duration (a direct flight is quicker than a connecting one and thus ranks higher in convenience). Flight duration was based on published airline schedules and not on actual flying time. Because of data limitations, CAB did not use the probability of obtaining a seat on one's desired flight as a measure of convenience, although that might be an important factor. CAB's data were from June 1978 to June 1981. Because CAB used scheduled flying time instead of actual, its study omitted consideration of flight delays that many passengers might consider important in measuring convenience. Such delays have increased since 1981. The decrease in controllers since the 1981 strike, the increase in flights from 1981 to 1984, and airlines' tendency to concentrate flights during peak travel hours all combined to overtax the capacity of some airports and

Table 3.3
CAB INDEXES^a OF SERVICE CONVENIENCE
IN HUB MARKETS

Hub category	June 1978	June 1981
Large to large	100.0	99.0
Large to medium	100.0	99.5
Large to small	100.0	93.7
Medium to medium	100.0	96.2
Medium to small	100.0	101.1
Small to small	100.0	102.8
Average	100.0	98.8
Nonhub ^b	100.0	101.9

^aThe indexes show the relative time costs of travel; therefore, smaller values indicate improvement.

^bMarkets that include a nonhub

Source: CAB.

the air traffic control system, resulting in flight delays at major airports. Nevertheless, CAB's study does show the trend in how closely airline schedules met passenger preferences from June 1978 to June 1981.

CAB found much variation in convenience changes but, on average, a traveler in 1981 had a slight improvement in convenience over 1978 (see table 3.3). A finding of any improvement is significant because departures and seats decreased from 1978 to 1981. Convenience on travel between large hubs, representing heavily traveled markets, remained essentially unchanged. Convenience improvement was greatest for travel between large and small hubs and between medium hubs. Convenience deteriorated for travel between small and medium hubs and between small hubs. Convenience for travel to and from nonhubs declined slightly, with improvement where trunk and local service airlines had been replaced by commuter airlines.¹¹

SEAT OCCUPANCY VARIED

The airline industry has always had unused capacity (seats flown empty), but traffic increased faster than capacity after CAB granted greater pricing flexibility in 1977. Air traffic (RPM), excluding commuter airlines, increased 51 percent from 1977 to 1984, while capacity (measured by available seat miles) grew 47 percent.

Load factor (seat occupancy), the industry's measure of traffic flown as a percentage of capacity available, increased dramatically in 1978, and rose again in 1979 (see fig. 3.12). As traffic declined in 1980 and 1981, the load factor also fell, yet remained higher than pre-deregulation levels. When traffic growth resumed in 1982 and 1983, load factor again rose, although it did not regain its 1979 peak of 62.8 percent. According to the former director of CAB's office of economic analysis, the 1979 load factor may have been unusually high due to a strike at the nation's largest domestic airline and the temporary grounding of DC-10 aircraft. In 1984, load factor fell to 57.8 percent. Aviation Daily reported that load factor for the 30 largest certificated airlines rose to 60.3 in April 1985, a 7-percent increase over April 1984.

While higher load factor suggests that airlines are making more productive and efficient use of their aircraft, it can also make air travel less convenient for some passengers. A rising average load factor implies that more flights are completely full. This makes the aircraft more crowded and increases the possibility that some travelers will be unable to obtain a seat

¹¹The markets involving nonhubs in CAB's sample were markets in which one city was a nonhub and the other was New York, Chicago, or Los Angeles, depending on the region in which the nonhub was located.

Figure 3.11: Capacity

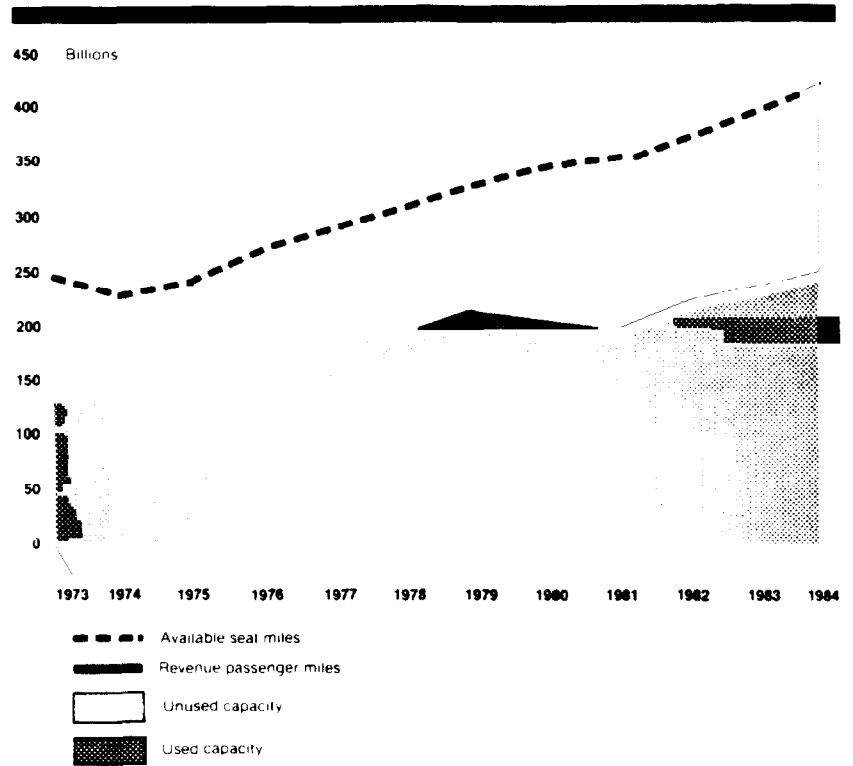
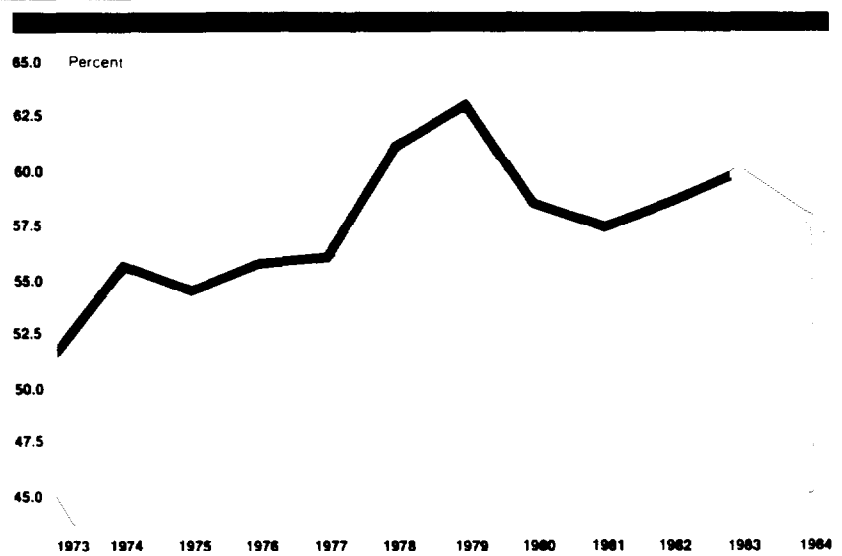


Figure 3.12: Load Factor



on their preferred flights. Thus discount fares, while benefiting consumers, also raise load factor, and can reduce service quality. However, with the pricing flexibility possible under deregulation, airlines can often restrict discounts to increase the likelihood that the additional passengers they generate will fill seats that would otherwise be flown empty. For example, an airline can offer standby fares whereby discount seats are offered just before takeoff if the plane is not full. More commonly, airlines are using capacity-controlled discount fares and peak pricing to achieve the same result. Capacity-controlled discount fares limit the number of seats available for discount passengers on a given flight. Airlines can forecast the full-fare demand on each flight and limit the number of discount seats, to try to assure that discount-ticket purchasers do not keep anyone willing to pay full fare from obtaining a seat.

CONCLUSIONS

Trends in fares and service quality are generally consistent with predictions of deregulation's effects. It appears that increased competition generally restrained fare increases so that fares are now more closely related to costs and are probably lower on average than they would have been if the regulatory policies in effect from 1974 to 1977 had continued. Service generally improved, a result that not all analysts anticipated, with increased departures and seats and more markets receiving through-plane service by scheduled airlines. It is possible that analysts generally underestimated how much air travel would increase in response to lower fare/lower service options. As expected, smaller airlines using smaller aircraft replaced major airlines in some of the smaller, short-distance markets. Convenience improved as more passengers were able to complete a trip without changing airlines. Load factors, expected to increase, have varied, generally staying above pre-deregulation levels but varying too much from year to year to identify a long-term trend.

CHAPTER 4

FINANCIAL PROBLEMS HAVE ACCOMPANIED

THE TRANSITION TO DEREGULATION

In the 6 years following deregulation, the airline industry recorded the worst financial performance in its 45-year history. Trunk and local service airlines¹ lost \$4 billion² from 1979 to 1984. Major causes were rapid fuel-price increases and economic recession, both unrelated to deregulation, and increased fare competition. Productivity growth partially offset rising costs but not enough to avoid widening operating losses. However, some airlines did well, and most reduced their losses in 1983. The industry earned an operating profit in the third and fourth quarters of 1983, followed by a strong recovery in 1984.

While high operating losses raised questions about the industry's future performance under deregulation, analysts expected some airlines to have financial problems during the transition from regulation. Airlines that cannot fully adjust to deregulation will continue to have financial problems; more may go bankrupt. Yet, in the long run, airlines that can reduce costs to match fares of lower cost competitors and find new profit opportunities in meeting unfulfilled passenger preferences will survive. In this way, the industry will become more efficient as those less able to meet the challenges of a deregulated environment go out of business.

MANY AIRLINES HAVE FACED FINANCIAL DIFFICULTY

Industry operating profit fell in the fourth quarter of 1978, plummeted in 1979, and set consecutive loss records for the next 3 years (see fig. 4.1). In 1982, the worst year in airline history, every trunk airline lost money; their operating losses were \$867 million as a group. The industry's rate of return on investment--net income plus interest expense divided

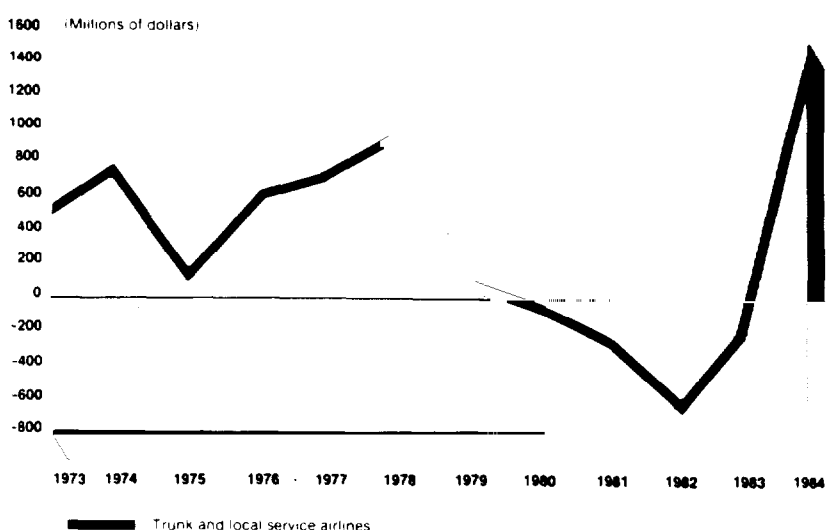
¹To analyze financial trends, we used the trunk and local service airlines of 1981, the last year CAB used these airline categories (see app. XVIII). For mergers, we recast data from prior periods to reflect both airlines.

²Unless otherwise noted, all references to earnings are to operating profit/loss, which comes directly from airline operations. Overall corporate financial results, called net profit/loss, is operating profit minus interest costs, taxes, and any gains or losses from accounting changes and extraordinary items, such as Pan American's income from selling its headquarters building and hotel subsidiary. Both operating and net profit show the same trends; we concentrated on operating profit in order to exclude non-airline financial results.

by debt and equity--fell to 3.3 percent (see app. XIX). Industry losses decreased in 1983 when half the trunk and local service airlines lost money, as compared with 58 percent in 1982. In contrast, only 7 percent of these airlines lost money in 1978.

Airlines from various categories³ ceased operating, most because of financial problems. Numerous commuters, two former charters, six new entrants and, for the first time, two trunks ceased operations. (Both trunks declared bankruptcy but came back into business on a smaller scale.) Other airlines are having financial difficulty. Of the 24 airlines that lost money

Figure 4.1: Operating Profit



³Airlines that ceased operating since deregulation

Trunk:	Braniff*	May	1982
	Continental*	September	1983
New entrants:	Air Niagara	June	1983
	Hawaii Express	December	1983
	Pacific Express	February	1984
	Pacific East	May	1984
	Northeastern	March	1985
Former charter:	Air One	October	1984
	Capitol	November	1984
	American International	September	1984
Former intrastate:	Air Florida	July	1984
Others:	Air New England	October	1981
	Kodiak	August	1983
	Wien Air Alaska	November	1984
Commuter:	13 ceased operations		

*returned to operations but on a smaller scale

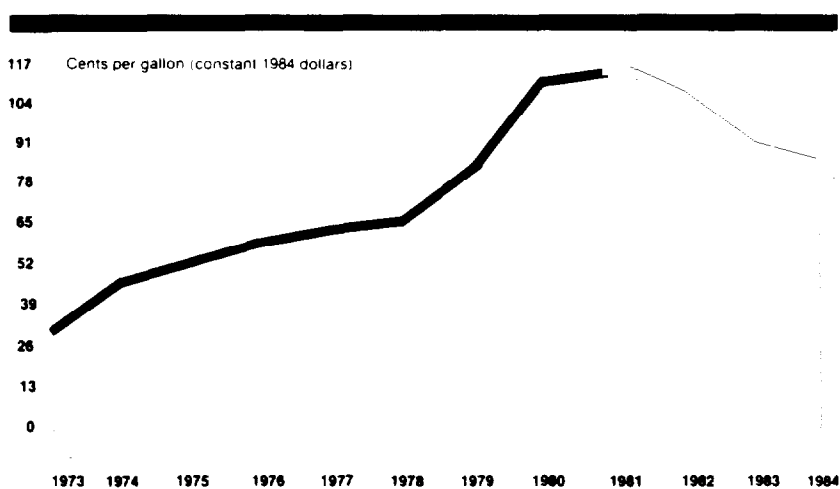
in 1983, eight (including Trans World Airlines, Republic, Pan American, and Eastern) had been losing money for at least 4 years. Trans World Airlines and Pan American continued to show operating losses in 1984.

Factors unrelated to deregulation

Rising fuel costs and economic recession contributed to operating losses following deregulation. Despite falling consumption, airline industry fuel expenses rose \$2.3 billion as fuel prices rose 90 percent (both in constant dollars) from 1978 to 1981 (see fig. 4.2). Fuel prices in constant dollars declined 11 percent in 1982, 12 percent in 1983, and 8 percent in 1984, helping reduce operating costs (see app. XX) and improve profits. Fare increases initiated by airlines in response to rising fuel prices caused demand for air travel to dampen. Economic recessions in 1980 and 1981-82 further dampened demand for air travel, leading to slower traffic growth. Passengers increased an average 3.5 percent annually from 1978 to 1984, compared with 7.2 percent from 1973 to 1978.

These problems of decreased profitability and slower traffic growth are not new to the industry. In fact, they are predictable, short-term results of fuel-price increases and economic recession and occurred earlier, in 1975, when rising fuel prices and economic recession also led to lower profits and slower traffic growth.

Figure 4.2 Fuel Prices



While fuel-price increases and the economic recession were major causes of recent operating losses, they are not the sole explanation. For example, operating profit fell sharply in the fourth quarter of 1978, but fuel prices did not jump until the second quarter of 1979, and the economy slumped later that year.

Moreover, fuel prices in constant dollars actually declined 11 percent in 1982, while operating losses rose 132 percent.

Flight restrictions after the August 1981 air traffic controllers' strike also reduced some airlines' profit. Under the system FAA devised to allocate limited landing/takeoff rights (slots) at affected airports, an airline had to use the slot or lose it. This led airlines to offer the same number of flights in winter months, when traffic falls, as in summer months, when travel peaks. Since costs depend largely on the number of flights and revenues depend on the level of traffic, the slot allocation system led to large losses during the winter months. Of course, flight restrictions may have improved some airlines' profits by protecting them from competition, and may have reduced profits for others by preventing them from expanding into profitable markets.

Although strike-related airport restrictions did not last long, the continued shortage of experienced air traffic controllers still contributes to costly flight delays. After the strike, FAA gradually increased air traffic control capacity at most airports and air control centers. According to CAB, by the fall of 1982, the air traffic system was operating at about 90 percent of capacity. But congestion was building at major airports as traffic grew and the airlines concentrated flights during peak hours (hubbing). To avoid wasting fuel and burdening the traffic control system, FAA instituted flow control procedures to reduce traffic in the air and cut airborne delays at arrival airports. However, these procedures delay some flights at departure. Flow control, poor weather conditions, and bunched airline schedules have increased delays during summer peak travel months. The number of flights delayed 15 minutes or longer was almost 41,000 in June 1984, more than double the delays in June 1983. August 1984 was worse, with 44,372 delays--the highest since current reporting procedures began in 1982.

Some delays are unavoidable, however, with weather-related delay accounting for an average of about two-thirds of all delays from 1976 to 1983. But flow control and schedule-related delay is a significant problem and costs the airlines millions of dollars for extra fuel and crew time. FAA plans to hire more controllers and has sought airline cooperation in spreading flights to avoid congestion. Competition is partly the cause of avoidable delay, resulting from airline flight schedules, and may be part of its solution. Airlines peak their flights because passengers prefer to travel at certain times of day. If delays become unacceptable to passengers, airlines may see a competitive opportunity in offering more off-peak flights (at lower prices) that avoid delay.

Factors related to deregulation

Intense fare competition also depressed airline profit. Prior to the deregulation act, CAB relaxed fare regulation; by March 1978 airlines were offering restricted discounts on virtually all routes. Yield (revenue per passenger mile) fell immediately and continued to decrease. Then in September 1978, CAB allowed airlines to reduce fares as much as 70 percent below the standard coach level. In the fourth quarter of 1978, trunk operating profit fell 56 percent over the same quarter a year earlier, even though passenger revenue was up 10 percent and traffic (measured in RPM) was up 15 percent. Profit continued to fall through 1982.

Heavy discounting to meet intense competition on some heavily traveled routes eroded the profits of established airlines. RPM flown on discounted fares increased from 39 percent of total RPM in 1977 to 81 percent in 1984, while the average discount rate rose from 30 to 51 percent of the standard fare. Trunks were most affected because their highly profitable routes drew competition and price wars. Although lower fares helped generate additional traffic, operating profit fell.

PRODUCTIVITY GROWTH WAS NOT ENOUGH TO OFFSET COST INCREASES AND LOWER FARES

When costs increase faster than productivity,⁴ profit generally falls unless the public pays the full difference in higher prices. From 1978 to 1983, constant-dollar airline costs rose 9 percent and productivity rose 3 percent.⁵ With constant-dollar average fares declining 8 percent, profits fell--but not for every airline.

Financial performance varied widely among airlines

Since deregulation, local service airlines as a group have done better financially than the trunks, as shown in figure 4.3. While trunk airlines faced increasing losses, the locals

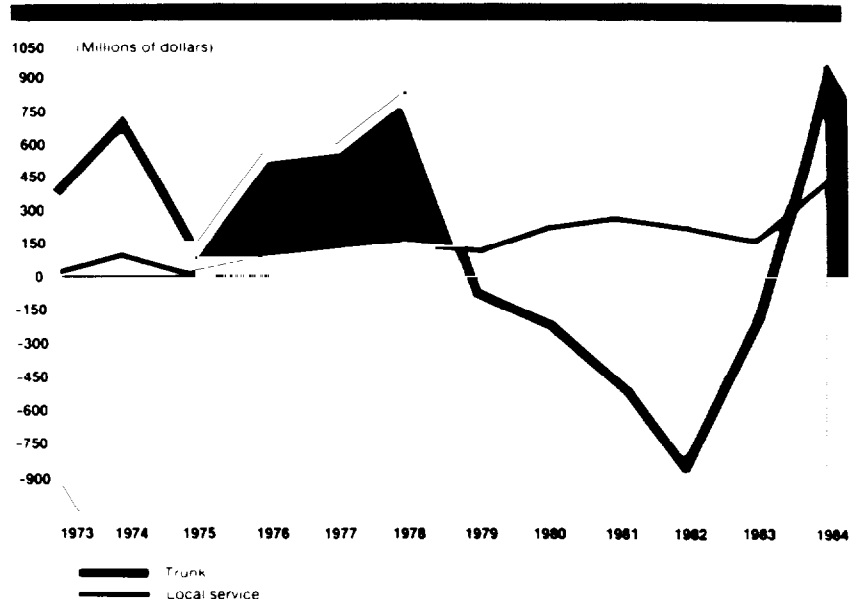
⁴Productivity, or how efficiently an industry uses its resources is measured by comparing changes in output or production with changes in inputs, such as labor and energy. An increase in productivity means that outputs increased faster than the quantities of inputs needed to produce them.

⁵Productivity data, supplied by the ATA, are based on the concept of total factor productivity--comparing changes in output with changes in all inputs to the production process. ATA measured output in constant-dollar revenue and measured input by 26 factors, such as wages and salaries, fuel, advertising, passenger food, and aircraft expenses.

as a group earned profits despite some individual losses. In 1982, when every trunk airline lost money, all local services earned operating profits. Two locals, USAir and Piedmont, earned profits throughout the industry slump.

The better financial performance of the local service airlines has been credited to more advantageous route systems, limited competition, and more efficient aircraft for their markets. The Congressional Research Service⁶ found that locals could expand more easily because they already had good feeder systems to larger markets before deregulation. With less competitive routes, they avoided fare wars that cut into airline profits.

Figure 4.3: Operating Profit



As a group, new entrant airlines earned their first operating profit in 1983. This \$4.2 million profit followed 1982's loss of \$31 million. Individual financial results varied: half earned profits, while at the extremes, People Express earned \$21 million and Midway Airlines lost \$12 million. Despite these profits on airline operations, the group's net loss (after interest cost, taxes, accounting changes, and extraordinary items) was \$20 million in 1983.

⁶John W. Fischer, with Michelle Robinson and Teresa Ellis Brown, Airline Deregulation: An Assessment, Congressional Research Service, Report No. 80-139E, Aug. 5, 1980, p. 35.

New entrant airlines as a group lost \$66 million in 1984. Of the 13 that reported financial results to CAB, 11 showed operating losses.

FINANCIAL PERFORMANCE IS IMPROVING

Although operating losses continued in 1983, trunk and local service airlines earned an operating profit in the last half of the year. In 1984, operating profits reached the highest point of the past 11 years.

Cost growth is slowing

After growing 4 percent annually (in constant dollars) from 1973 to 1981, ATA's cost index (see app. XXI) fell 3 percent in 1982, 2 percent in 1983, and 3 percent in 1984. Labor and fuel costs largely account for cost trends since, in 1984, they accounted for 34.9 percent and 24.1 percent of operating expenses, respectively.

Labor

Labor cost per employee (adjusted for inflation) and employment declined slightly from 1978 to 1984. According to ATA's airline cost index, average compensation cost per employee in constant dollars rose at an annual rate of 2.7 percent from 1973 to 1978 and declined 0.96 percent from 1978 to 1984.

**Figure 4.4: Employment,
U.S. Scheduled Airlines**



Source: Air Transport Association

According to ATA data, the number of people employed by scheduled airlines increased 5 percent between 1978 and 1984, with considerable change during the period and among airlines. As shown in figure 4.4, employment rose 9.5 percent from 1978 to 1980, peaking at 360,517 workers; fell 8.8 percent through 1983; then rose 5 percent in 1984, to 345,079 employees. Trunk full-time employment fell 11 percent from October 1978 to December 1984, while local service employment increased 31 percent.

Average compensation costs for full-time employees, including pension and insurance benefits, rose from \$16,727 in 1973 to \$42,164 in 1984 (to \$18,039 in constant 1973 dollars). Average compensation costs in constant dollars increased 14 percent from 1973 to 1978 and declined 6 percent from 1978 to 1984.

Pay varies widely among airlines. Pilots at United averaged \$96,086 in 1984, while at Midway they averaged \$38,862. A Congressional Research Service study⁷ of airline compensation relates the variance to new airlines, which tend to be nonunion and/or have lower labor costs. According to ATA first-quarter 1983 data, average annual compensation for employees of new airlines was about 53 percent of the industry average, \$22,000 versus \$41,811.

Since labor is the airlines' largest expense, competition will pressure airlines to cut pay levels. Several agreements in 1983 cut the pay of existing employees and established significantly lower pay scales for new workers. For example, Trans World Airlines pilots agreed to a 10-percent pay cut. New pilots at American Airlines will earn 50 percent less than existing ones. Other concessions at various airlines include delayed pay increases, reduced fringe benefits, and productivity improvements, such as increasing employees' hours flown. In return, employees received benefits such as company stock, profit-sharing, and representation on the board of directors. If the current pay structure continues, pay differences among airlines may narrow as new hires at established airlines replace retiring workers paid according to historical wage levels and as pay of workers at new airlines rises with seniority.

Fuel

Fuel expenses fell in 1982, 1983, and 1984, primarily because prices declined. Prices dropped 5 cents per gallon in 1982, 9 cents in 1983, and 4 cents in 1984, from a high of \$1.02 in 1981. Based on 1983 prices and consumption, a 1-cent drop in fuel price saves the industry about \$97 million a year. Better aircraft fuel efficiency helped reduce fuel expenses. As

⁷Richard Belous, Compensation in the Airline Industry, Congressional Research Service, Report No. 83-606E, Dec. 7, 1983, p. 2.

measured by the industry standard of available ton miles per gallon, aircraft fuel efficiency increased every year but one from 1973 to 1984. Airlines brought more efficient aircraft into service and designed their operations specifically to economize fuel. Continued gains are expected as new aircraft, which are 30 to 40 percent more fuel-efficient, replace early jets.

Profit improved in mid-1983

Although financial losses continued in 1983, more airlines earned operating and net profits as yield (revenue per passenger-mile) improved in the last half of the year. ATA's former chief economist attributed the industry's improved performance to an improved economy, declining fuel prices, and easing of price wars late in the year.

As airlines competed in a \$99 transcontinental fare war during the first quarter of 1983, operating losses rose. Although RPM increased 12 percent over the same quarter in 1982, not one trunk or local service airline earned an operating profit. Total losses for the quarter were \$634 million, compared with a \$676 million loss for the entire year of 1982, the highest yearly loss in airline history. Yield fell from 12.22 cents in the first quarter of 1982 to 10.89 cents in the first quarter of 1983. Based on 1983 traffic and revenue, a 1-cent increase or decrease in yield equals a \$2-billion change in the industry's annual passenger revenue. Yield fell for every trunk and local service airline, ranging from a decline of 0.61 cents for Northwest to 2.76 cents for Trans World Airlines.

Yield made a marked turnaround in the third and fourth quarters of 1983, as did operating profit. Eleven of the 16 trunk and local service airlines increased their yield in the third quarter over 1982, and all but one did so in the fourth quarter. Total yield rose 3.6 percent in the third quarter and 11.3 percent in the fourth quarter over yields in the same quarters in 1982. As a group, trunk and local service airlines earned an operating and net profit in the third and fourth quarters.

The recovery that began in the last half of 1983 is continuing. Trunk and local services' operating profit in 1984 was \$1.5 billion. Only three trunk and two local service airlines lost money. According to Aviation Daily, first-quarter 1985 trunk and local service operating profit is up 11 percent over the first quarter of 1984.

CONCLUSIONS

The airline industry suffered high operating losses after deregulation due to rapidly rising fuel costs, economic recession, the air traffic controllers' strike, and fare competition. Fuel costs, recession, and the strike were not related to

deregulation, and their impacts have diminished over time. Financial performance varied widely, suggesting that airlines can be profitable in a competitive market. Lower fuel and unit labor costs indicate that the financial outlook has improved for many airlines; 1984 was a strong year financially. These facts tend to support the belief that the poor financial performance of some airlines is a temporary rather than a permanent feature of airline competition. Analysts warn that the transition is not yet complete. During this period of adjustment, airlines that cannot adjust to the more competitive environment may be forced to reorganize or go out of business. Once the industry has fully adjusted to deregulation, it should be profitable over time, although some airlines may occasionally suffer losses and even leave the industry.

CHAPTER 5

THE INDUSTRY IS MORE EFFICIENT

AND RESPONSIVE TO CONSUMERS

The airline industry's performance since 1978--in terms of fares, service, and profits--is generally consistent with economic expectations of deregulation. Increased competition has generally kept average fares lower and made them more cost-based than they probably would have been under regulation as it existed from 1974 to 1977. In addition, service is more widely available nationwide and more convenient, while profits have varied widely among airlines. These changes result in the industry operating more efficiently and offering more price/quality options than it did under regulation. Traffic grew to a record 341 million domestic passengers in 1984. Most, but not all, airline passengers benefited from industry changes. The industry is still adapting to deregulation, with a complete adjustment likely being years away.

EFFICIENCY IS IMPROVING

Economic theory suggests that a deregulated airline industry will be more efficient than a regulated one because competitive pressure will help keep production costs down. Regulation sustained less efficient airlines by (1) protecting their markets from penetration by lower cost competitors, (2) approving more profitable routes for financially troubled companies, and (3) encouraging financially weak airlines to merge with stronger ones.

Economists and other analysts expected that deregulation would increase efficiency in several ways: (1) new lower cost airlines would enter markets, reducing average industry cost levels; (2) airlines would alter their route structures and aircraft mix, seeking to lower per-passenger costs; and (3) the ease of entry and increase in fare competition would keep pressure on all airlines to keep costs down. In an unregulated and unprotected environment, bankruptcies would occur when less efficient airlines were unable to adapt to the more competitive environment. By giving airlines freedom to profit and freedom to fail, competition would help assure that only the most efficient airlines survived.

Consistent with these expectations, lower cost airlines formed, offering lower fares in established markets. This competition pressured existing airlines to seek cost reductions. Existing airlines also made extensive route changes, withdrawing from markets where they could not profitably compete. Bankruptcies have occurred, with some airlines reorganizing to fly again with lower costs. As a result of all these changes, the airline industry is becoming more efficient.

AIRLINES OFFER MORE PRICE/SERVICE OPTIONS

Economic theory also suggests that a deregulated airline industry will offer more price/quality options, thus being more responsive to consumer preferences. Airline passengers have widely varying preferences for either lower prices or better service. For example, a vacation traveler may want the lowest possible fare even if it means traveling at a less convenient time of day. A business traveler may value time more highly, and be willing to pay a higher fare to depart at a more convenient time. Because regulation produced relatively few price/service combinations in a market, some passengers got better service than they wanted to pay for, while others would have paid more for even better service.

Since deregulation allowed airlines to compete freely in price and service quality, economists expected that airlines would offer more price/service variations. With fares unregulated, airlines are experimenting with fares and service to determine passengers' preferred combinations. Airlines now offer a wider variety of options, including lower fares at less desirable flight times, separate seating (at higher prices) for business travelers, and discounts for advance reservations. Passengers can choose low fares with few service frills, or pay more for such conveniences as wider seats, free drinks, gourmet meals, and faster check-in procedures. At least one airline separately prices services included in a ticket price and allows passengers to decide whether or not to purchase them. Services offered on this a-la-carte basis include baggage handling, in-flight movies, wine, and a four-course meal served on fine china. With more options to choose from, more consumers are able to select the price/service combination they prefer.

TRAFFIC HAS INCREASED

With more price/service options, including some combining lower fares and less service, and with the general economic recovery, more people are traveling. Traffic grew to a record 341 million domestic passengers in 1984 (see app. XXII). While deregulation was undoubtedly an influence, air travel is sensitive to general economic trends. A slower growing economy and increases in the constant-dollar average fare in 1979 and 1980 (corresponding to fuel-price increases) slowed traffic growth after deregulation. Appendix XXIII shows the relationship between traffic and the economy.

NOT EVERYONE BENEFITED

Increased efficiency and greater price/service variety benefited most, but not all, air travelers. Passengers in many heavily traveled, long-distance markets gained the most as fares declined and increased competition brought greater choice in fares and service. Although fewer in number, people in some

lightly traveled, short-distance markets did not benefit from lower fares. Fares increased on average relative to the adjusted pre-deregulation formula in short-distance markets with fewer than 200 passengers per day.

While fare and service changes did not benefit everyone, the shifts eased economic distortions caused by regulation. By setting fares below cost in short-distance markets and above cost in long-distance ones, regulation distorted prices. By underpricing service to communities where passengers would be unwilling to pay full costs, and precluding increased competition in the most profitable markets, regulation distorted air service. Free entry and fare competition allow market forces to determine price and service on each route. Thus, passengers who benefited the most from regulation's economic distortions now benefit less, if at all, from the market-balancing force of increased competition. Conversely, those who suffered from regulation's distortions have benefited the most from deregulation.

THE INDUSTRY IS STILL ADAPTING TO DEREGULATION

The airline industry developed its structure, routes, service, and pricing during 40 years of federal regulation. In the past 7 years, airlines began the transition to a deregulated industry. Trends in structure, conduct, and performance discussed in this report were consistent with the expectations about the short-run adaptations to deregulation. But the process of adapting to a deregulated environment is not yet over.

The industry's structure is likely to remain competitive because entry into the industry and into individual interstate markets is no longer constrained by CAB regulation. But the number of companies may contract further if bankruptcies continue and wide variation in financial performance discourages investment in new airlines. In the long run, trunk airlines may halt or reverse their declining market shares through route strategies designed to recapture feeder traffic and by buying new aircraft better suited to serving small communities.

Policies to cope with airport congestion may have a significant impact on the effectiveness of competition as they involve different means of restricting access to markets. FAA estimates that 8 large hub airports have capacity¹ problems; the number may reach 61 (almost all large and many medium hubs) by the year 2000. Because physical space and environmental restrictions may preclude building new airports or expanding existing ones, proposed solutions usually focus on making more efficient use of existing airport capacity. This includes

¹Airport capacity is the ability to accommodate demand for service.

technological improvements in controlling air traffic that would more evenly spread traffic by time of day and among airports, and management techniques such as allowing airline officials to meet and discuss schedule changes through a grant of immunity from antitrust prosecution. Some proposed actions--diverting some traffic to other airports, restricting access by aircraft type, and placing quotas on takeoffs and landings or on the number of passengers--would partially offset the benefits of route deregulation. Economic options, including higher landing fees during peak hours and auctioning limited takeoff/landing rights, would distribute the right of access through market-oriented mechanisms and would be more consistent with a policy of promoting competition. While airport access is an important and open issue, determining the extent of the problem and identifying appropriate solutions is beyond the scope of this report.

Economic theory suggests that airlines' freedom to enter new markets (subject to potential access problems just discussed) and compete in price will, in the long run, bring fares close to the competitive level (cost plus a reasonable profit). This is because airlines cannot sustain fares substantially above the competitive level, since the resultant excess profit will attract competition. Similarly, economic theory suggests that price discrimination among passengers flying in different markets will tend to diminish over the long run because it creates profitable opportunities for non-discriminating competitors.

We expect continued service shifts as airlines seek higher profits by changing routes and offering different price/service options. Without legislative change, more small communities will likely lose service when the current subsidy program ends (scheduled for 1988). Most of the communities receiving subsidies are not making progress toward attaining self-supporting air service and have lost passengers since deregulation. We previously recommended² that the Congress consider changing the program's eligibility criteria to allow the CAB (now Department of Transportation) greater flexibility to increase or decrease subsidies to selected communities.

Economic theory suggests that long-run trends in industry performance will continue to show improved efficiency as competition encourages cost cutting. A variety in price/service options will continue, but whether that variety grows or contracts will depend on consumer preferences. If consumers find the variety too confusing, airlines may offer fewer options.

²More Flexible Eligibility Criteria Could Enhance the Small Communities Essential Air Service Subsidy Program
(GAO/RCED-83-97, May 18, 1983).

CONCLUSIONS

Because many factors affected the airline industry since 1978, we cannot quantify direct cause-and-effect relationships between deregulation and the industry's current status. However, changes in fares, service, and profit are consistent with economists' and other analysts' expectations of the effects of increased competition on a formerly regulated industry. It appears that industry changes benefited most passengers. Yet results in individual markets varied and not everyone benefited. The transition from a regulated to a more competitive environment is not yet complete. Industry changes are likely to continue as airlines adjust their service, operations, equipment, and prices in response to changing consumer preferences and competitive opportunities.

REQUEST LETTER FROM THE
HOUSE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION
AND ITS SUBCOMMITTEE ON AVIATION

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Committee on Public Works and Transportation
U.S. House of Representatives
Room 2101, Rayburn House Office Building
Washington, D.C. 20515
TELEPHONE AREA CODE 202-225-4472

January 26, 1984

Honorable Charles Bowsher
Comptroller General of the United States
General Accounting Office
Washington, D.C. 20548


Dear Mr. Bowsher:

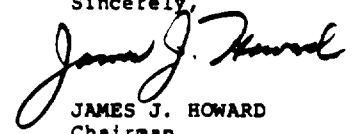
For the past four years your office has prepared an annual report to the Chairman of the Committee on Public Works and Transportation and the Chairman of the Subcommittee on Aviation and its members entitled "The Changing Airline Industry: A Status Report Through (year)". The reports have analyzed the effects of airline deregulation based on data through calendar year 1982. We would like to have these four previous reports updated to incorporate data from calendar year 1983. In addition, we would welcome any conclusions you are able to draw from the data as to the effectiveness of deregulation.

The Committee expects to be considering legislation on deregulation and the sunset of the Civil Aeronautics Board this Spring. Consequently, it would be useful to the Committee to have the GAO report at the earliest possible date and no later than June 1.

Thank you for your cooperation in this matter.

Sincerely,


NORMAN Y. MINETA
Chairman
Subcommittee on Aviation


JAMES J. HOWARD
Chairman
Committee on Public
Works and Transportation

Based on subsequent discussions, we provided preliminary 1983 data to the committee and subcommittee on May 4, 1984. We agreed to assess whether industry changes were consistent with economic expectations of deregulation and provide a report at a later date.

LIST OF GAO REPORTS ON THE AIRLINE INDUSTRY
SINCE DEREGULATION

Aircraft Delays at Major U.S. Airports Can be Reduced
(GAO/CED-79-102, Sept. 4, 1979).

The Changing Airline Industry: A Status Report Through 1979
(GAO/CED-80-143, Sept. 12, 1980).

The Changing Airline Industry: A Status Report Through 1980
(GAO/CED-81-103, June 1, 1981).

The Changing Airline Industry: A Status Report Through 1981
(GAO/CED-82-94, June 24, 1982).

A Strategy is Needed to Deal With Peaking Problems at
International Airports (GAO/GGD-83-4, March 24, 1983).

More Flexible Eligibility Criteria Could Enhance the Small
Communities Essential Air Service Subsidy Program
(GAO/RCED-83-97, May 18, 1983).

The Changing Airline Industry: A Status Report Through 1982
(GAO/RCED-83-179, July 6, 1983).

Safety Standards on Small Passenger Aircraft--With Nine or
Fewer Seats--are Significantly Less Stringent than on
Larger Aircraft (GAO/RCED-84-2, Jan. 4, 1984).

Legislation Needed to Clarify Future of Consumer Protection and
Federal Preemption after the Civil Aeronautics Board Sunsets
(GAO/RCED-84-154, June 13, 1984).

AVERAGE FARE PER REVENUE PASSENGER-MILE^a

<u>Calendar year</u>	<u>Average fare paid^b</u>	
	<u>Actual</u>	<u>In 1970 dollars</u>
	----- (cents) -----	
1972	6.4	5.9
1973	6.6	5.8
1974	7.5	5.9
1975	7.7	5.5
1976	8.2	5.6
1977	8.6	5.5
1978	8.5	5.1
1979	8.9	4.8
1980	11.6	5.5
1981	13.1	5.6
1982	12.3	5.0
1983	12.1	4.7
1984	12.9	4.8

^aCovers certificated carriers engaged in scheduled, domestic passenger service that filed financial data with CAB.

^bComputed by dividing revenues from scheduled passenger service by the number of revenue passenger miles flown.

SELECTIVE BIBLIOGRAPHY OF STUDIES ON AIRLINE DEREGULATION

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GROWTH OF HUB CITY CONCEPT

Airline	Leading hub city in 1983	Percentage of airline's domestic departures at hub		Percentage increase in departures at hub
		1978 (2nd quarter)	1983 (2nd quarter)	
American	Dallas/Ft. Worth	11.2	28.6	113.7
U.S. Air ^a	Pittsburgh	16.0	23.2	45.7
Continental ^b	Houston	12.8	22.9	45.8
Delta	Atlanta	18.3	21.4	11.4
Eastern	Atlanta	18.3	21.0	1.0
Frontier	Denver	18.0	33.8	23.8
Northwest ^c	Minneapolis/ St. Paul	16.1	20.7	18.7
Ozark	St. Louis	15.5	35.6	53.7
Pan American ^d	New York	12.3	24.0	95.1
Piedmont	Charlotte	3.7	19.6	583.0
Republic ^e	Minneapolis/ St. Paul	3.4	7.7	91.1
Trans World	St. Louis	11.9	33.0	81.3
United	Chicago	13.8	18.9	1.5
Western	Salt Lake City	10.3	16.9	129.3

Source: CAB.

^aFormerly Allegheny Airlines.

^b1978 departures were combined for Continental and Texas International, which merged in 1982.

^cThere was a strike at Northwest in the second quarter of 1978. Therefore, in both years, data for service during the first quarter is reported.

^d1978 departures were combined for National and Pan American, which merged in 1980.

^eNorth Central, Southern, and Hughes Airwest departures were combined for 1978. North Central and Southern merged in 1979, forming Republic Airlines. Hughes Airwest became a Republic subsidiary in 1980.

NUMBER OF MULTI-AIRLINE MARKETS

	Number of markets		Percentage of markets	
	3/1/78	3/1/84	3/1/78	3/1/84
Single-airline markets	3,978	3,592	77.1	66.2
Multi-airline markets:				
2 airlines	824	955	16.0	17.6
3 airlines	217	430	4.2	7.9
4 airlines	72	218	1.4	4.0
5 airlines	34	73	0.7	1.3
6 airlines	15	66	0.3	1.2
7 airlines	6	37	0.1	0.7
8 airlines	4	13	0.1	0.2
9 airlines	5	17	0.1	0.3
10 or more airlines	<u>3</u>	<u>22</u>	<u>0.1</u>	<u>0.4</u>
Subtotal	1,180	1,831	22.9 ^a	33.8 ^a
Total markets	5,158	5,423	100.0 ^a	100.0 ^a
^a Percentage totals do not all equal 100 due to rounding.				
Source: Official Airline Guide, March 1, 1978, and March 1, 1984, as reported by CAB.				

CHANGES IN FARES AND COSTS
(percentage)

	Before deregulation (1972-77) ^a		After deregulation (1977-84)	
	<u>Total increase</u>	<u>Average annual compounded increases</u>	<u>Total increase</u>	<u>Average annual compounded increase</u>
Airfares ^b	34.4	6.1	50.0	6.0
Airline costs index ^c	75.7	11.9	87.4 ^d	13.4 ^d
Consumer Price Index	44.9	7.7	71.4	8.0

^aWe chose 1977 as our base year for comparing changes in fares before and after deregulation because CAB in 1977 reduced its restrictions on fare competition and let more airlines serve many markets.

^bCovers certificated carriers engaged in scheduled domestic passenger service that filed financial data with CAB.

^cBased on CAB index of costs to the airlines--fuel, personnel goods and services purchased, and landing fees, but not capital charges such as depreciation, amortization, and interest. This index compares prices paid by the airlines in a given period to prices paid in 1978.

^dBased on airline costs through 1982. CAB/DOT discontinued this index in 1983.

METHODOLOGY FOR ASSESSINGHOW FARES HAVE CHANGED SINCE DEREGULATION

To assess deregulation's effect on fares, we compared fares from the second quarter of 1983 (the latest data available when we did our study) in a sample of markets to a fare formula used from 1974 to 1977, adjusted to reflect cost increases through 1983. Although no one can know what fares would be today if regulation had continued, we believe that the adjusted fare formula is a reasonable benchmark for assessing how fares have changed since deregulation.

SELECTING THE SAMPLE

Our sample, which came from a CAB data base, included all 1,552 markets (city-pairs) in the 48 contiguous states and the District of Columbia that are over 50 miles apart and have nonstop service. CAB excluded markets under 50 miles apart because they reflect abnormalities in the way city classifications are made. According to CAB, the data base also excluded markets where passengers were too few to calculate an average fare level. CAB's data base included only markets with nonstop service. However, within nonstop markets, the fare formula applied to all passengers, whether or not they were traveling nonstop.

SUBDIVIDING THE SAMPLE

To analyze the data, we asked CAB to divide the sample markets based on hub size and distance. We used hub size to approximate community size. Using CAB's hub classifications,¹ we created four new hub categories to reflect not only the size of the origin hub, but also the size of the destination hub.

<u>Size of origin and destination hub</u>	<u>Community sizes (approximate)</u>
Small and small hub Small and nonhub Nonhub and nonhub	Small and small
Large and small hub Large and nonhub Medium and small hub Medium and nonhub	Small and large/medium
Large and medium hub Medium and medium hub	Large/medium and medium

¹CAB classifies communities into hubs based on the share of all passengers departing from that community (see ch. 3).

(continued from previous page)

<u>Size of origin and destination hub</u>	<u>Community sizes (approximate)</u>
Large and large hub	Large and large

We further divided markets in each hub category into three distance groups:

- 50 to 400 miles,
- 401 to 1200 miles, and
- 1201 or more miles.

The 50-to-400-mile category contains 648 short-distance markets. The 401-to-1200-mile category contains 704 medium-distance markets, including many routes from northeastern cities to Florida (Boston to Tampa, for example, is 1,182 miles) and east-west routes up to about half the distance across the country (Boston to Minneapolis, for example, is 1,120 miles). The 1201-or-more-mile category, containing 200 long-distance markets, includes transcontinental routes and other major markets, such as Chicago to Los Angeles (1,751 miles).

MEASURING CURRENT FARES

Second-quarter 1983 fares in each market came from CAB's Origin-Destination Survey of Airline Passenger Traffic. This survey is based on a 10-percent sample of passenger tickets representing travel on scheduled, certificated airlines.²

To calculate an average fare per passenger for each hub-distance category, each market was weighted by its share of passengers in its hub-distance category.

ESTABLISHING THE BENCHMARK

From 1974 to February 1977, airlines set fares in individual markets according to a CAB formula, adjusted throughout the period to give airlines the opportunity to earn a rate of return

²CAB excludes tickets with unreliable data. We used markets where CAB generated average fare data.

on investment of 12 percent.³ CAB continued to calculate the adjusted fare formula even after its authority over fares ended in 1983. Our benchmark for assessing how deregulation affected second-quarter 1983 fares was CAB's adjusted fare formula for January 1, 1983 (the next adjustment was in July 1983). That formula was

\$27.68 plus \$.1514 per mile (0-500 miles)
plus \$.1155 per mile (501-1500 miles)
plus \$.1110 per mile (over 1500 miles)

Assumptions

In using the CAB formula as a benchmark to assess fare changes, we are assuming that if regulation had continued, CAB fare policy would be the same today as it was from 1974 to February 1977. Over the 40 years that regulation was in effect, CAB policy on fare flexibility varied. For example, although airlines have set fares according to a formula since 1969, discounts as high as 67 percent resulted in 44.8 percent of total traffic traveling at a discount in 1970. When CAB developed a new fare formula in 1974, based on a lengthy investigation of passenger fares, it restricted discounts from the formula level until 1977. From February 1977 until the deregulation act was signed in October 1978, CAB granted airlines increasing fare flexibility. By March 1978, discounts were common. In September 1978, CAB allowed airlines to charge as much as 10 percent above or 70 percent below the fare formula, effectively severing the connection between fares and the formula. We believe the fare flexibility that began in 1977 was part of the general movement to deregulate. Consequently, we believe CAB's fare policy from 1974 to February 1977 is the best indicator of what fare policy would have been without deregulation.

³Because a full explanation of CAB ratemaking is beyond the scope of this report, we have simplified our discussion of the ratemaking process. The ratemaking return on investment was based on a complex set of standards and accounting for many items including load factor, aircraft seating and utilization, costs of leased aircraft, depreciation, and the effect of increased fares on traffic and revenue. If the return on investment calculated for ratemaking (which was often higher after CAB adjustments than the standard financial rate of return) was less than 12 percent, the CAB approved a general rate increase. The result of rate adjustments was a revised formula consisting of a fixed terminal charge plus a charge per mile, which varied by mileage category.

We also assume that regulated fares were close to the formula level. We recognize that a market's average fare was not equal to the fare formula even under regulation. CAB allowed local service airlines to charge 30 percent above the fare formula, and it approved discount fares below the formula in many markets. Thus, using the fare formula as a benchmark may understate fares in markets served by local service airlines (primarily short-distance markets) and may overstate fares in markets where airlines offered discount fares. Nevertheless, on balance we believe that the differences between actual fares and the fare formula during CAB regulation, when averaged among all markets within a hub-distance category, would be slight and thus would not significantly affect the relationship we found between deregulated fares and the formula fare.

RELATIONSHIP BETWEEN ACTUAL
AND FORMULA FARES

Actual fares and adjusted formula fares were compared by calculating their ratio such that

- a ratio of 100 means that actual fares equal the regulatory fare formula,
- a ratio of less than 100 means that actual fares are lower than the formula, and
- a ratio greater than 100 means that actual fares are higher than the formula.

The calculated results appear on the next page. (They are also shown in ch. 3.)

ACTUAL FARES AS A PERCENTAGE OF FORMULA FARE Second Quarter 1983 GAO			
Size of origin and destination communities	Market distance (miles)		
	50-400	401-1200	1201+
Small & small	83 ^a	106 ^b	c
Small & large/medium	93	96	73
Large/medium & medium	84	86	74
Large & large	78	91	71

^aThe results in this category, representing short-distance markets between small communities, were heavily influenced by one market (Billings to Great Falls, Mont.), which accounted for 16 percent of passengers in the category and had an unusually low ratio of 1983 average fare to the formula fare (38 percent). Because this one market had such a large influence on the results in its category, we recomputed the ratio of 1983 average fare to formula fares with the market excluded. The recomputed ratio was 92 percent, which is similar to the ratios obtained in short- and medium-distance markets between small and large/medium communities. In other categories we did not find markets with a large share of passengers and a ratio of average fare to the formula fare that differed significantly from the category average.

^bThis category contained only four of the 1,552 markets (compared with at least 28 markets in all other categories) and less than one-tenth of one percent of the passengers in all categories.

^cThere were no markets in this category.

Source: Data calculated by CAB at GAO's request.

NUMBER OF MARKETS WITH NONSTOP SERVICE

	<u>July 1978 markets</u>	<u>Markets losing all nonstop service</u>	<u>Markets gaining new nonstop service</u>	<u>July 1983 markets</u>	<u>Change 1978- 1983</u>
Between large hubs and:					
Large hubs	222	6	23	239	+17
Between medium hubs and:					
Large hubs	377	46	90	421	+44
Medium hubs	103	18	22	107	+ 4
Between small hubs and:					
Large hubs	237	54	48	231	-6
Medium hubs	139	38	34	135	-4
Small hubs	57	19	17	55	-2
Between nonhubs and:					
Large hubs	217	54	56	219	+ 2
Medium hubs	122	33	43	132	+10
Small hubs	146	47	47	146	+ 0
Nonhubs	250	79	91	262	+12
Total	1,870	394	471	1,947	+77

Source: Official Airline Guide as reported by CAB.

NUMBER OF MARKETS WITH JET NONSTOP SERVICE

	<u>July 1978 markets</u>	<u>Markets losing all jet nonstop service</u>	<u>Markets gaining new jet nonstop service</u>	<u>July 1983 markets</u>	<u>Change 1978- 1983</u>
Between large hubs and:					
Large hubs	222	6	23	239	+17
Between medium hubs and:					
Large hubs	377	51	89	415	+38
Medium hubs	103	26	21	98	-5
Between small hubs and:					
Large hubs	226	65	45	206	-20
Medium hubs	125	51	27	101	-24
Small hubs	49	23	17	43	-6
Between nonhubs and:					
Large hubs	147	66	33	114	-33
Medium hubs	66	31	29	64	-2
Small hubs	90	43	20	67	-23
Nonhubs	86	48	24	62	-24
Total	1,491	410	328	1,409	-82

Source: Official Airline Guide as reported by CAB.

SEATS PER DEPARTURE

	<u>Large hub</u>	<u>Medium hub</u>	<u>Small hub</u>	<u>Nonhub</u>
1977	113.5	97.6	89.3	41.4
1978	113.6	100.0	84.0	38.5
1979	112.2	93.6	78.7	36.4
1980	112.1	90.0	88.5	36.9
1981	113.9	90.5	83.3	36.2
1982	117.3	90.5	80.0	34.7
1983	126.8	93.6	80.9	34.2
1984	115.3	93.4	74.8	31.6

SCHEDULED WEEKLY DEPARTURES AT COMMUNITIES WHERE
SMALLER AIRLINES REPLACED LARGER AIRLINES

Community	Week of		Percentage change	Community	Week of		Percentage change
	Oct. 1 1977	Oct. 1 1984			Oct. 1 1977	Oct. 1 1984	
<u>Alabama</u>				<u>Idaho</u>			
Anniston	74	34	-54.0	Lewiston/ Clarkston WA	86	180	109.3
Gadsden ^a	21	30	42.8	Pocatello	55	165	200.0
Muscleshools	20	75	275.0	Twin Falls ^a	47	61	29.7
Tuscaloosa	46	26	-43.4	<u>Illinois</u>			
<u>Arizona</u>				Bloomington	56	93	66.0
Flagstaff	36	87	141.6	Decatur	74	110	48.6
Yuma	53	171	222.6	Marion/Herrin	27	69	155.5
<u>Arkansas</u>				Mattoon/Charleston	24	38	58.3
Fayetteville	153	262	71.2	Mount Vernon ^a	24	36	50.0
Fort Smith	170	177	4.1	Quincy/Hannibal MO	64	87	35.9
Harrison ^a	28	47	67.8	Rockford	28	69	146.4
Hot Springs	42	33	-21.4	<u>Iowa</u>			
Texarkana TX	40	79	97.5	Burlington	40	93	132.5
<u>California</u>				Dubuque	105	124	18.0
Bakersfield	78	166	112.8	Fort Dodge ^a	18	40	122.2
Blythe ^a	14	12	-14.2	Mason City ^a	38	65	71.0
Chico	90	77	-14.4	Ottumwa ^a	26	30	15.3
Crescent City ^a	14	19	35.7	<u>Kansas</u>			
El Centro	71	89	25.3	Liberal/Guymon OK	20	42	110.0
Merced ^a	14	36	157.1	Manhattan/Junction City/Ft. Riley	133	189	42.1
Modesto ^a	59	96	62.7	Salina	40	65	62.5
Santa Maria	76	208	173.6	<u>Kentucky</u>			
Stockton ^a	87	117	34.4	London/Corbin ^a	20	16	-20.0
Visalia ^a	38	38	-	Paducah	65	151	132.3
<u>Colorado</u>				<u>Louisiana</u>			
Alamosa	0	19	-	Alexandria	103	120	16.5
Cortez	21	75	257.1	Lake Charles	84	177	110.7
Gunnison	21	55	161.9	<u>Maine</u>			
Montrose	21	55	161.9	Augusta/Waterville	204	110	-46.0
Pueblo	35	45	28.5	Lewiston/Auburn ^a	19	22	15.7
Steamboat Springs/ Hayden/Craig	91	33	-63.7	Presque Isle/ Houlton	51	70	37.2
<u>Connecticut</u>							
New Haven	208	502	141.3				
<u>Georgia</u>							
Athens ^a	27	41	51.8				
Moultrie/ Thomasville ^a	14	16	14.2				

^aSubsidized under the Essential Air Service Subsidy Program.

Community	Week of		Percentage change
	Oct. 1 1977	Oct. 1 1984	
<u>Massachusetts</u>			
Hyannis	275	608	121.0
Martha's Vine- yard	171	300	75.4
Nantucket	209	527	152.1
Worcester	52	68	30.7
<u>Michigan</u>			
Alpena	26	24	-7.6
Benton Harbor/ St. Joseph	40	19	-52.5
Escanaba	42	67	59.5
Flint	92	190	106.5
Iron Mountain/ Kingsford	42	45	7.1
Ironwood/ Ashland WI	33	12	-63.6
Jackson ^a	33	17	-48.4
Manistee/Luding- ton ^a	7	12	71.4
Menominee/ Marinette WI ^a	35	24	-31.4
Muskegon	83	173	108.4
Sault Ste. Marie ^a	14	18	28.5
<u>Minnesota</u>			
Fairmont ^a	27	46	70.3
Mankato ^a	27	24	-11.1
Thief River Falls ^a	21	31	47.6
Worthington ^a	27	12	-55.5
<u>Mississippi</u>			
Greenwood ^a	19	20	5.2
University/Oxford ^a	28	15	-46.4
Tupelo	43	69	60.4
<u>Missouri</u>			
Cape Girardeau/ Sikeston	60	47	-21.6
Fort Leonard Wood	86	35	-59.3
<u>Montana</u>			
Glasgow ^a	24	21	-12.5
Glendive ^a	12	19	58.3
Havre ^a	11	12	9.0
Lewistown ^a	12	24	100.0
Miles City ^a	12	19	58.3
Sidney ^a	12	26	116.6
Wolf Point ^a	12	15	25.0

Community	Week of		Percentage change
	Oct. 1 1977	Oct. 1 1984	
<u>Nebraska</u>			
Alliance ^a	46	72	56.5
Chadron ^a	14	36	157.1
Columbus ^a	28	19	-32.1
Hastings ^a	28	64	128.5
Kearney ^a	35	64	82.8
McCook ^a	44	52	18.1
Norfolk ^a	27	24	-11.1
Sidney ^a	40	72	80.0
<u>Nevada</u>			
Elko	14	42	200.0
Ely ^a	14	42	200.0
<u>New Hampshire</u>			
Keene	97	88	-9.2
Lebanon/White River Jct. VT	89	143	60.7
Manchester/Concord	108	209	93.5
<u>New Jersey</u>			
Atlantic City	74	255	244.5
<u>New Mexico</u>			
Alamogordo/Holloman AFB ^a	39	70	79.4
Carlsbad ^a	21	38	80.9
Clovis	42	24	-42.8
Farmington	70	125	78.5
Gallup ^a	28	45	60.7
Hobbs ^a	21	57	171.4
Roswell	38	106	178.9
Silver City/Hurley/ Deming ^a	30	13	-56.6
<u>New York</u>			
Utica/Rome	88	81	-7.9
<u>North Carolina</u>			
Hickory	74	72	-2.7
New Bern	62	39	-37.0
Rocky Mount ^a	28	20	-28.5
Winston-Salem ^a	87	24	-72.4
<u>North Dakota</u>			
Devils Lake ^a	7	12	71.4
Jamestown ^a	14	30	114.2
Williston ^a	30	68	126.6

^aSubsidized under the Essential Air Service Subsidy Program.

Community	Week of		Percentage change	Community	Week of		Percentage change
	Oct. 1 1977	Oct. 1 1984			Oct. 1 1977	Oct. 1 1984	
<u>Oklahoma</u>				<u>Virginia</u>			
Enid ^a	18	24	33.3	Danville ^a	28	42	50.0
Lawton/Ft. Sill	95	80	-15.7	Hot Springs ^a	21	14	-33.3
McAlester ^a	6	12	100.0	Newport News	91	92	1.0
Ponca City ^a	12	12	-	Staunton	47	55	17.0
<u>Oregon</u>				<u>Washington</u>			
Bend/Redmond	36	40	11.1	Yakima	150	227	51.3
Klamath Falls ^a	38	39	2.6	<u>West Virginia</u>			
North Bend/ Coos Bay	31	27	-12.9	Beckley	59	27	-54.2
Pendleton ^a	30	30	-	Clarksburg/Fairmont	100	104	4.0
Salem ^a	26	12	-53.8	Morgantown	99	89	-10.1
<u>Pennsylvania</u>				Parkersburg/Marietta			
Bradford	57	48	-15.7	OH	49	81	65.3
Williamsport	95	43	-54.7	Princeton/Bluefield	91	27	-70.3
<u>South Carolina</u>				<u>Wisconsin</u>			
Florence	69	133	92.7	Beloit/Janesville ^a	19	24	26.3
<u>South Dakota</u>				Manitowoc ^a			
Brookings ^a	26	36	38.4	Oshkosh	0	78	-
Huron ^a	21	36	71.4	Rhineland/Land			
Mitchell ^a	28	18	-35.7	O'Lakes	21	75	257.1
Yankton ^a	27	24	-11.1	<u>Wyoming</u>			
<u>Tennessee</u>				Cheyenne			
Clarksville/ Ft. Campbell/ Hopkinsville KY ^a	12	17	41.6	Cody/Lovell/Powell	21	13	-38.0
Jackson	60	32	-46.6	Laramie	77	50	-35.0
<u>Texas</u>				Riverton/Lander			
Abilene	102	94	-7.8	Rock Springs	59	81	37.2
Beaumont/Port				Sheridan	14	20	42.8
Laredo	14	64	357.1	Worland ^a	14	22	57.1
San Angelo	49	85	73.4	<u>Total</u>			
Wichita Falls	84	74	-11.9		8,262	12,102	46.5
<u>Utah</u>							
Vernal	38	31	-18.4				
<u>Vermont</u>							
Montpelier/Barre ^a	43	18	-58.1				

^aSubsidized under the Essential Air Service Subsidy Program.

WEEKLY DEPARTURES AND AVAILABLE SEATS^a

	Hub category ^b				Total ^c
	Large	Medium	Small	Nonhub	
Number of communities ^d	25	33	52	431	541
NUMBER OF SCHEDULED DEPARTURES DURING WEEK COVERING (IN THOUSANDS)					
October 1, 1977	59.9	20.5	11.2	29.0	120.6
October 1, 1978	63.4	22.0	11.9	31.2	128.6
October 1, 1979	68.6	23.5	12.7	33.0	137.8
October 1, 1980	65.1	21.1	11.3	29.8	127.3
October 1, 1981	63.2	21.0	10.8	27.6	122.6
October 1, 1982	68.2	24.3	12.5	28.8	133.8
October 1, 1983	78.1	26.7	13.6	32.2	150.6
October 1, 1984	85.9	28.9	14.7	34.8	164.4
Percentage change					
1977-78	5.9	7.3	7.0	7.6	6.6
1978-79	8.2	6.7	6.7	5.7	7.2
1979-80	-5.1	-10.4	-11.0	-9.7	-7.6
1980-81	-2.9	-0.1	-5.0	-7.6	-3.7
1981-82	7.9	15.4	16.5	4.3	9.2
1982-83	14.5	9.9	8.5	11.9	12.5
1983-84	10.0	8.5	8.0	8.2	9.2
1977-84	43.4	41.0	31.6	20.0	36.3
ESTIMATED NUMBER OF AVAILABLE SEATS DURING WEEK COVERING (IN MILLIONS)					
October 1, 1977	6.8	2.0	1.0	1.2	11.0
October 1, 1978	7.2	2.2	1.0	1.2	11.6
October 1, 1979	7.7	2.2	1.0	1.2	12.1
October 1, 1980	7.3	1.9	1.0	1.1	11.3
October 1, 1981	7.2	1.9	0.9	1.0	11.0
October 1, 1982	8.0	2.2	1.0	1.0	12.2
October 1, 1983	9.0	2.5	1.1	1.1	13.7
October 1, 1984	9.9	2.7	1.1	1.1	14.9
Percentage change					
1977-78	5.7	5.0	6.2	2.8	5.3
1978-79	7.7	1.9	-0.2	-1.3	5.0
1979-80	-5.7	-11.5	-6.1	-10.0	-7.2
1980-81	-1.1	0.3	-7.1	-12.7	-2.5
1981-82	10.9	15.4	14.7	5.9	11.6
1982-83	12.7	12.4	7.7	8.1	11.8
1983-84	10.6	7.8	3.4	1.8	8.8
1977-84	46.7	32.9	18.2	-7.2	35.7

^aScheduled service.^bMarkets were assigned a hub category based on their status on Dec. 31, 1983.^cTotals may not always equal 100 due to rounding.^dRepresents all hub airports that were provided service on October 1, 1977 plus those that obtained new service and were still served through Oct. 1, 1984.

LARGE, MEDIUM, AND SMALL AIR TRAFFIC HUBS^aLARGE HUBS

Atlanta, GA
 Boston, MA
 Charlotte, NC
 Chicago, IL
 Dallas/Ft. Worth, TX
 Denver, CO
 Detroit, MI
 Houston, TX
 Las Vegas, NV
 Los Angeles, CA
 Miami, FL
 Minneapolis/St. Paul, MN
 Newark, NJ
 New York, NY
 Orlando, FL
 Philadelphia, PA
 Phoenix, AZ
 Pittsburgh, PA
 St. Louis, MO
 Salt Lake City, UT
 San Diego, CA
 San Francisco, CA
 Seattle, WA
 Tampa, FL
 Washington, DC

MEDIUM HUBS

Albuquerque, NM
 Austin, TX
 Baltimore, MD
 Buffalo, NY
 Cincinnati, OH
 Cleveland, OH
 Columbus, OH
 Dayton, OH
 El Paso, TX
 Hartford, CT
 Indianapolis, IN
 Jacksonville, FL
 Kansas City, MO
 Louisville, KY
 Memphis, TN
 Milwaukee, WI
 Nashville, TN
 New Orleans, LA
 Norfolk/Virginia Beach, VA
 Oklahoma City, OK
 Omaha, NE
 Ontario, CA
 Portland, OR
 Raleigh/Durham, NC
 Reno, NV
 Rochester, NY
 Sacramento, CA
 San Antonio, TX
 San Jose, CA
 Syracuse, NY
 Tucson, AZ
 Tulsa, OK
 West Palm Beach, FL

^aAs of December 1983.

SMALL HUBS

Albany, NY	Huntsville/Decatur, AL
Amarillo, TX	Palm Springs, CA
Atlantic City, NJ	Long Island MacArthur Airport, NY
Baton Rouge, LA	Jackson/Vicksburg, MS
Billings, MT	Knoxville, TN
Birmingham, AL	Lansing, MI
Boise, ID	Lexington/Frankfort, KY
Harlingen, TX	Little Rock, AR
Burlington, VT	Lubbock, TX
Charleston, SC	Madison, WI
Charleston, WV	Melbourne, FL
Chattanooga, TN	Midland/Odessa, TX
Colorado Springs, CO	Mobile, AL/Pascagoula, MS
Columbia, SC	Montgomery, AL
Corpus Christi, TX	Pensacola, FL
Daytona Beach, FL	Portland, ME
Des Moines, IA	Providence, RI
Eugene, OR	Richmond, VA
Ft. Wayne, IN	Roanoke, VA
Fresno, CA	Sarasota/Bradenton Airport, FL
Grand Rapids, MI	Savannah, GA
Green Bay, WI	Shreveport, LA
Greensboro/High Point, NC	Sioux Falls, SD
Greenville/Spartanburg, SC	Spokane, WA
Harrisburg, PA	Tallahassee, FL
	Toledo, OH
	Wichita, KS

Note: Large hubs enplane 1 percent or more of total revenue passengers, medium hubs enplane 0.25 to 0.99 percent, small hubs enplane 0.05 to 0.24 percent. All other points not listed above are nonhubs, which enplane less than 0.05 percent of total passengers.

Source: CAB.

STATES WITH INCREASES IN
WEEKLY DEPARTURES AND AVAILABLE SEATS^a

<u>State^b</u>	October 1, 1977 vs. October 1, 1984 Percentage increase	
	<u>Departures</u>	<u>Available seats</u>
Idaho	136.2	4.0
Arizona	118.1	106.1
New Hampshire	103.8	65.0
Connecticut	81.4	35.7
Maryland	77.9	118.0
Florida	74.8	30.0
New Jersey	65.9	92.7
North Carolina	58.9	88.4
Michigan	57.1	28.5
Massachusetts	52.9	46.8
New York	52.7	58.9
Georgia	52.6	46.3
New Mexico	51.9	44.3
Virginia	51.8	23.1
Wyoming	50.4	40.3
Montana	50.3	4.1
Nebraska	46.1	11.7
Colorado	45.6	64.2
Ohio	39.7	16.6
Utah	35.9	77.6
Missouri	35.1	46.2
Minnesota	34.6	37.1
Nevada	31.6	44.2
Texas	28.9	73.9
Kentucky	26.8	6.2
California	26.8	25.5
Illinois	25.4	17.3
Washington	21.5	30.3
South Carolina	20.2	6.6
Vermont	19.9	58.6
Pennsylvania	19.7	23.1
Oklahoma	19.2	14.1
Maine	17.6	27.1
Louisiana	17.4	8.9
South Dakota	16.4	1.2
District of Columbia	15.5	21.9
Oregon	13.4	8.1
Tennessee	11.8	6.9
Indiana	10.2	16.9

^aIncludes scheduled air service listed in the Official Airline Guide for the 48 contiguous states and the District of Columbia.

^bListed in descending order based on percentage increase of departures.

STATES WITH DECREASES IN
WEEKLY DEPARTURES AND/OR AVAILABLE SEATS

October 1, 1977 vs. October 1, 1984
Percentage change

<u>State^a</u>	<u>All scheduled service^b</u>		<u>Certificated service only^c</u>	
	<u>Departures</u>	<u>Available seats</u>	<u>Departures</u>	<u>Available seats</u>
Iowa	40.6	-10.5	63.3	-8.8
Arkansas	14.4	-3.4	25.9	-3.4
Wisconsin	4.4	-3.3	14.1	0.5
West Virginia	-8.2	-23.3	-8.0	-23.5
Alabama	-8.4	-6.7	-5.6	-6.5
Mississippi	-9.0	-19.3	-6.3	-19.0
Kansas	-9.6	-17.1	-0.3	-16.0
North Dakota	-10.5	-31.2	-10.5	-31.2
Rhode Island	-22.3	27.6	-0.2	32.0
Delaware ^d	-68.8	-4.2	0	0

^aListed in descending order based on percentage changes in scheduled service departures.

^bIncludes all scheduled air service--both certificated and noncertificated--listed in the Official Airline Guide for the 48 contiguous states and the District of Columbia.

^cIncludes only scheduled air service listed in the Official Airline Guide for certificated points in the 48 contiguous states and the District of Columbia that received air service on October 24, 1978.

^dDelaware had no certificated points on October 24, 1978, and therefore lost no certificated service.

WEEKLY FLIGHTS BETWEEN HUB CATEGORIES^a

	Flights per week			Percentage change ^c
	Week covering 10/1/77	Week covering 10/1/84	Change ^b	
	----- (thousands) -----			
<u>Between</u>				
Large and large	46.0	54.2	8.2	17.8
Large and medium	42.0	51.2	9.3	22.1
Large and small	22.4	27.4	5.0	22.2
Large and nonhub	41.2	47.3	6.0	14.7
Medium and medium	7.4	9.9	2.5	33.5
Medium and small	8.7	10.9	2.2	25.5
Medium and nonhub	13.3	13.5	0.2	1.2
Small and small	2.8	2.7	-0.1	-2.9
Small and nonhub	9.6	8.0	-1.6	-16.9
Nonhub and nonhub	<u>18.8</u>	<u>17.5</u>	<u>-1.3</u>	<u>-6.9</u>
Total ^a	<u>212.2</u>	<u>242.6</u>	<u>30.4</u>	14.3

^aMarkets were assigned to hub categories based on their status as of December 31, 1983.

^b1977 figures plus change do not always equal 1984 figure due to rounding.

^cDifference in the percentage change in departures (app. XIII) and flights results from two factors. First, the data bases differ. Departure data in appendix XIII includes foreign flag operations, while the flight data do not. Second, a compounding effect increases the number of flights on multi-stop flights. For example, on a flight from point A to point B to point C, there are two departures (A and B), but there are three flights (A to B, B to C, and A to C).

TRUNK AND LOCAL SERVICE AIRLINES
1981

<u>TRUNK</u>	<u>LOCAL SERVICE</u>
American	Air New England
Braniff	Alaska Airlines
Continental ^a	Frontier
Delta	Ozark
Eastern	Piedmont
Northwest	Republic ^c
Pan American ^b	USAir
Trans World Airlines	Wien Air Alaska
United	
Western	

^aTexas International merged into Continental in November 1982.

^bNational Airlines merged into Pan American effective January 19, 1980.

^cEffective July 1, 1979, Southern merged into North Central, forming Republic Airlines. In October 1980 Hughes Airwest became a subsidiary of Republic Airlines.

RATE OF RETURN ON INVESTMENT^a

<u>Year</u>	<u>Percentage return on investment^b</u>
1972	6.1
1973	6.3
1974	9.0
1975	3.2
1976	7.9
1977	9.7
1978	12.9
1979	7.1
1980	5.6 ^c
1981	4.3 ^d
1982	3.3
1983	5.1
1984	9.4
1972-77 average	7.0
1978-84 average	6.9
1972-84 average	6.9

^aCovers certificated carriers engaged in scheduled, domestic passenger service that filed financial data with CAB.

^bBased on CAB definition of airline rate of return. Basically, the figure represents net income and interest expense divided by the sum of airline debt and equity.

^cAt the suggestion of CAB we excluded Pan American World Airways' extraordinary gain of \$294 million on the sale of the Pan Am Building in 1980. If this extraordinary gain is included, the 1980 return on investment is 7.8 percent.

^dAt the suggestion of CAB we excluded Pan American World Airways' extraordinary gain of \$249.4 million on the sale of Intercontinental Hotels in 1981. If this extraordinary gain is included, the 1981 return on investment is 6 percent. The 1972-84 average is 7.2 percent if both the 1980 and 1981 extraordinary gains are included.

OPERATING COST PER REVENUE TON-MILE^a

<u>Year</u>	<u>Actual cost per ton-mile^b</u>	<u>Cost per ton-mile in 1978 dollars^c</u>
	----- (cents) -----	
1972	52.35	100.29
1973	55.07	98.52
1974	63.30	95.33
1975	69.73	94.10
1976	70.87	86.32
1977	74.50	81.24
1978	74.15	74.15
1979	83.66	71.08
1980	109.67	74.96
1981	125.01	74.50
1982	121.23	70.56
1983	117.02	d
1984	118.49	d

^aCovers certificated carriers engaged in scheduled, domestic passenger service that filed financial data with CAB.

^bComputed by dividing operating expenses by revenue ton-miles.

^cActual costs were adjusted to 1978 dollars using the CAB cost index (see app. VII).

^dNot available for 1983 and 1984 because CAB/DOT discontinued the airline cost index in 1983.

AIRLINE COST INDEX^a 1973-83

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
CONSUMER PRICE INDEX												
Index (1972 = 100)	106.2	117.9	128.7	136.1	144.9	156.0	173.5	197.0	217.4	230.7	238.2	248.3
Percent increase over previous year	6.2%	11.0%	9.2%	5.7%	6.5%	7.7%	11.2%	13.5%	10.4%	6.1%	3.3%	4.2%
COMPOSITE AIRLINE COST INDEX												
Index (1972 = 100)	107.2	127.7	141.6	152.9	169.4	183.5	211.0	260.5	293.9	302.1	306.6	309.4
Percent increase over previous year	7.2%	19.1%	10.9%	8.0%	10.8%	8.3%	15.0%	23.5%	12.8%	2.8%	1.5%	0.9%
LABOR												
Index (1972 = 100)	106.9	118.3	129.6	142.4	161.6	179.3	191.8	211.5	233.0	250.7	269.5	269.4
Percent increase over previous year	6.9%	10.7%	9.6%	9.9%	13.5%	11.0%	7.0%	10.3%	10.2%	7.6%	7.5%	0%
Percent of cash operating expense	46.2	41.7	41.1	41.5	41.6	41.9	39.0	35.4	34.9	35.2	36.2	34.9
FUEL												
Index (1972 = 100)	109.4	209.2	250.8	272.2	311.1	337.2	494.9	770.8	893.1	842.6	762.8	729.2
Percent increase over previous year	9.4%	91.2%	19.9%	8.5%	14.3%	8.4%	46.8%	55.7%	15.9%	(5.7%)	(9.5%)	(4.4%)
Percent of cash operating expense	12.1	17.3	19.0	19.3	20.2	19.8	24.5	29.9	29.6	27.4	24.7	24.1
INTEREST												
Index (1972 = 100)	114.4	124.9	114.8	113.0	128.2	143.0	142.7	162.0	181.6	182.4	180.5	190.4
Percent increase over previous year	14.4%	9.2%	(8.1%)	(1.6%)	13.5%	11.5%	(0.2%)	13.5%	12.1%	0.4%	(1.0%)	5.5%
Percent of cash operating expense	3.6	3.4	2.8	2.4	2.1	2.8	2.6	3.0	3.6	4.0	4.1	4.0
PASSENGER FOOD												
Index (1972 = 100)	105.7	112.7	119.8	120.5	126.6	127.6	136.5	153.0	164.9	162.9	169.4	175.4
Percent increase over previous year	5.7%	6.6%	6.3%	0.6%	5.1%	0.8%	7.0%	12.1%	7.8%	(1.2%)	4.0%	3.5%
Percent of cash operating expense	3.9	3.5	3.4	3.4	3.4	3.4	3.3	2.9	2.8	2.8	3.1	3.2

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
ADVERTISING/PROMOTION												
Index (1972 = 100)	97.4	96.8	101.4	99.3	107.1	102.4	109.7	135.2	171.2	197.2	202.1	203.0
Percent increase over previous year	(2.6%)	(0.6%)	4.8%	(2.1%)	7.9%	(4.4%)	7.1%	23.2%	26.6%	15.2%	2.5%	0.4%
Percent of cash operating expense	2.3	1.9	1.8	1.8	1.8	1.7	1.6	1.5	1.8	2.1	2.2	2.2
LANDING FEES												
Index (1972 = 100)	109.6	125.6	135.1	154.1	160.5	161.1	174.7	190.8	205.6	211.6	213.7	218.5
Percent increase over previous year	9.6%	14.6%	7.6%	14.1%	4.2%	0.4%	8.4%	9.2%	7.8%	2.9%	1.0%	2.2%
Percent of cash operating expense	2.7	2.4	2.4	2.6	2.4	2.2	2.0	1.7	1.6	1.7	1.7	1.7
TRAFFIC COMMISSIONS												
Index (1972 = 100)	110.3	134.4	154.0	179.0	190.6	199.6	229.2	318.6	395.7	409.4	436.6	479.9
Percent increase over previous year	10.3%	21.8%	14.6%	16.2%	6.5%	4.7%	14.8%	39.0%	24.2%	3.5%	6.6%	9.9%
Percent of cash operating expense	3.6	3.6	3.8	4.4	4.5	4.7	4.8	5.3	5.8	6.3	6.9	7.6
ALL OTHER COSTS												
Index (1972 = 100)	105.8	115.1	125.8	132.3	140.0	150.4	163.4	178.5	195.6	207.4	215.3	223.5
Percent increase over previous year	5.8%	8.8%	9.3%	5.2%	5.8%	7.4%	8.6%	9.2%	9.6%	6.0%	3.8%	3.8%
Percent of cash operating expense	25.6	26.1	25.7	24.7	24.0	23.6	22.1	20.2	19.9	20.5	21.0	22.3

SOURCE: Air Transport Association

^aMajors and nationals

Fuel index 1973-82 excludes Air Florida and World.
1983 indexes exclude Continental and Air Florida.

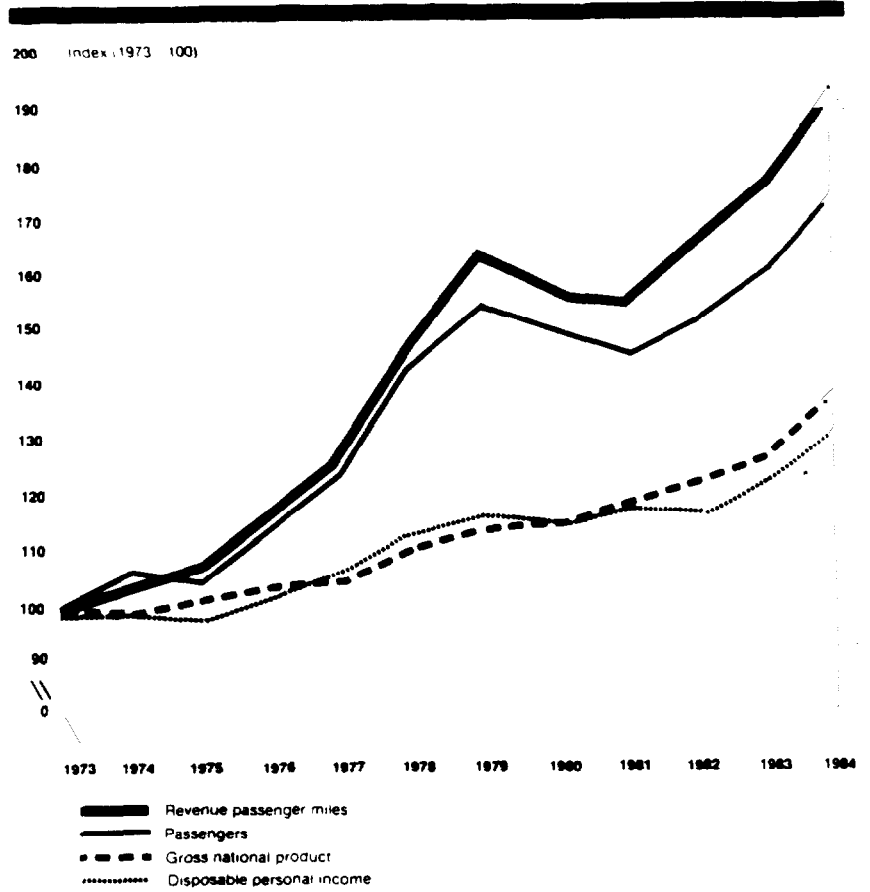
REVENUE PASSENGER-MILES AND PASSENGERS^a

<u>Year</u>	<u>Revenue passenger-miles</u> Change from <u>preceding year</u>			<u>Domestic passengers</u> Change from <u>preceding year</u>		
	<u>Amount</u>	<u>Amount</u>	<u>Percentage</u>	<u>Amount</u>	<u>Amount</u>	<u>Percentage</u>
	---(billions)---			---(millions)---		
1973	129.3	-	-	195.6	-	-
1974	133.0	3.7	2.9	203.4	7.8	4.0
1975	135.2	2.2	1.7	202.9	-0.5	-0.2
1976	149.1	13.9	10.3	222.1	19.2	9.5
1977	161.3	12.2	8.2	241.4	19.3	8.7
1978	188.2	26.9	16.7	276.8	35.4	14.7
1979	209.9	21.7	11.5	301.6	24.8	9.0
1980	201.3	-8.7	-4.1	283.1	-18.5	-6.1
1981	199.9	-1.4	-0.7	275.5	-7.6	-2.7
1982	212.0	12.1	6.1	288.8	13.3	4.8
1983	229.4	17.4	8.2	314.3	25.5	8.8
1984	246.2	16.8	7.3	340.9	26.6	8.5
<u>Averages</u>						
1973-77	141.6	8.0	5.7	213.1	11.5	5.4
1978-84	212.4	12.1	6.2	297.3	14.2	5.1

^aDomestic service, including both certificated and commuter airlines.

TRAFFIC AND ECONOMIC INDICATORS

Figure XXIII.1: Changes in Traffic ^a and Economic Indicators, 1973-1984



^aCovers domestic scheduled certificated carriers, former intrastate carriers, and commuters

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