

Deregulation of the Domestic Airline Industry in the United States

Information Paper

This Paper discusses the aviation regulatory system in the United States and its effects on the airline industry there. It concentrates on the domestic passenger market as this is the area currently under review in Australia. Air cargo is briefly considered but there is no discussion of changes in international aviation policy.

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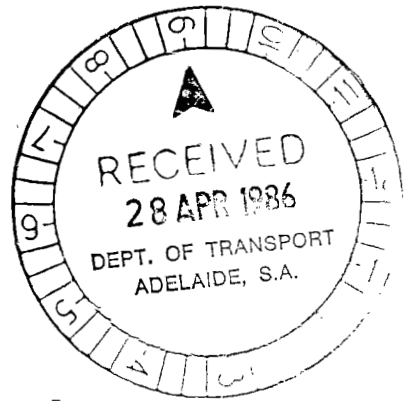
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Deregulation of the Domestic Airline Industry in the United States



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FOREWORD

On 7 March 1985, the Minister for Aviation announced the establishment of an Independent Review of Economic Regulation of Domestic Aviation. The Terms of Reference required the consultant heading the Review to consider a number of matters including domestic aviation regulation in overseas countries.

This Paper presents the findings of a BTE study of airline regulation in the United States. It was prepared in the Financial Assessment Branch by Mr R. K. Starr who was assisted by Mr P. Robertson.

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CHAPTER 1 INTRODUCTION

On 7 March 1985, the Minister for Aviation announced the establishment of an Independent Review of Economic Regulation of Domestic Aviation. The Terms of Reference called for a review of the existing system of economic regulation in Australia as well as advice on appropriate arrangements into the 1990s. They also specifically directed that attention be given to a number of matters including 'economic regulatory arrangements for domestic aviation in overseas countries, and any conclusions which may be of relevance to Australia'.

Recent developments in overseas countries may be relevant to the Australian situation for a number of reasons. They provide information on alternative systems of aviation regulation and indicate some options for regulatory change in Australia. They also demonstrate the effects of regulatory change in overseas countries on industry characteristics such as numbers of carriers, levels of competition and fare structures.

The debate on airline regulation in Australia has included frequent reference to the deregulation of the domestic airline industry in the United States (US).¹ The discussion has covered topics such as the benefits and costs of these changes and whether the US experience can be applied to Australia's domestic air transport industry.

THE US AIRLINE INDUSTRY

The US is the largest single air passenger market in the world.² Its

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1. Strictly speaking, the changes in the US involved regulatory reform rather than complete deregulation as some areas of economic regulation were retained. However, in view of the substantial reduction in the level of regulation in the US and the terminology adopted in the literature, the term 'deregulation' is used in this Paper.
 2. The data in this section are mainly drawn from the annual reports of the Air Transport Association. Members of this organisation carry more than 98 per cent of US scheduled airline passenger traffic, the major exclusions being some new entrants and smaller commuter airlines. Other sources include *Airline Executive* (June 1985) and *Air Transport World* (May 1985).

population of 234 million is only 5 per cent of the world total, but the annual average of 1.4 enplanements per capita results in an airline industry which is much larger in relative terms. In 1984, US airlines operated more than 5 million flights. They carried 319 million passengers on domestic routes and a further 24 million passengers on international services. The domestic market in the US accounted for 38 per cent of world airline passenger traffic in 1984.

US airlines are the largest group of carriers in the world, accounting for almost 41 per cent of total traffic in terms of revenue passenger-miles in 1984. The major US carriers are also large by world standards. In 1984, six of the world's 10 largest airlines in terms of passengers carried were US operators. They also occupied seven of the top 10 positions on the basis of passenger-miles, eight positions in terms of fleet size and seven positions on the basis of operating revenue.

The size of the US market is reflected in airport operations. The busiest US airport in 1984 was Chicago O'Hare which handled 45.7 million passenger arrivals and departures. The twentieth largest US airport handled 10.2 million passengers in that year.

US airlines operating scheduled services had assets of US\$36.8 billion, operating revenues of US\$43.8 billion and overall net profits of US\$825 million in 1984. They employed 345 079 people of whom almost 30 000 were pilots or co-pilots. The scheduled and charter airline fleet totalled 4223 aircraft which included 878 narrow-body twin-jets, 1055 narrow-body tri-jets and 524 wide-body aircraft. Proposed purchases by members of the Air Transport Association at the end of 1984 involved 388 firm orders and 391 options.

By mid-1984, 123 US airlines were certificated to operate scheduled interstate passenger services with large jet aircraft and a further 200 commuter airlines were operating aircraft with 60 seats or less. Carriers ranged in size from operators with a single aircraft to United which had 319 aircraft. The major carriers accounted for a substantial proportion of the US airline industry's output, with the four largest operators carrying 44 per cent of passengers and 46 per cent of traffic in terms of revenue passenger-miles in 1984. The corresponding figures for the 10 largest airlines were 71 per cent and 80 per cent.³

3. The 10 largest US carriers in terms of revenue passenger-miles were United, American, Eastern, TWA, Pan Am, Delta, Northwest, Continental, Western and Republic.

The airlines also occupy a significant position within the domestic transport industry in the US. In 1984 they accounted for 88.2 per cent of passenger-miles performed by common carriers on inter-city routes, the remaining common carrier traffic being transported by buses and trains. The airlines' share of the total inter-city passenger market, which also included private motor vehicles, was 14.3 per cent.

OUTLINE OF THE PAPER

This Paper discusses the regulatory system in the US and its effects on the airline industry. It concentrates on the domestic passenger market as this is the area currently under review in Australia. Air cargo is briefly considered but there is no discussion of changes in international aviation policy.⁴

Chapter 2 describes the regulatory system that was implemented between 1938 and the mid-1970s. The effects of detailed regulation on the US airline industry are also outlined.

The process of deregulation is discussed in Chapter 3. This covers the initial relaxation of detailed regulation from 1976 and the phased deregulation of the domestic airline industry in the US following the passage of legislation in 1978. Chapter 4 identifies several other developments over this period which complicate an assessment of the effects of deregulation.

The changes in the US airline industry which accompanied deregulation are described in the following three chapters. The structural effects are outlined in Chapter 5 in terms of new entrants, route networks, levels of competition and the sales and reservations system. The discussion of the financial effects in Chapter 6 covers costs, labour, pricing and profitability. Chapter 7 describes the service effects of deregulation under the headings of service quality, operations to small communities and safety.

Chapter 8 presents the concluding remarks for the study.

4. The International Air Transportation Act 1979 promoted lower fares and greater competition on international routes to and from the US, although the scope for liberalisation was limited by the framework of bilateral agreements with other countries.

CHAPTER 2 REGULATION PRIOR TO REFORMS

The US air transport industry was fostered by the Federal Government almost from its inception. The Contract Air Mail Act of 1925, which was the first major piece of US civil aviation legislation, provided subsidies for the private carriage of mail. Airline operators were virtually free from regulatory controls until the passage in 1926 of the Air Commerce Act which provided for the regulation of the industry, primarily in the areas of operational procedures and safety.

Allegations that subsidised carriers faced destructive competition from other operators led to the enactment of the Civil Aeronautics Act in 1938. This legislation amended or repealed all major existing aviation law. It resulted in the establishment of the Civil Aeronautics Authority (CAA) which was given responsibility for the economic regulation of interstate air transport. In 1940 the CAA was reorganised into the Civil Aeronautics Board (CAB) which also took over the activities of the Air Safety Board. Airport and airway development activities were transferred to the Department of Commerce (Meyer et al. 1981, 19).

The sometimes conflicting goals specified in the Civil Aeronautics Act included the encouragement of air transport, fair competition, co-ordinated services, safety, reasonable and non-discriminatory charges, profitable operations and defence considerations. The major elements of economic regulation remained essentially the same from 1938 until the mid-1970s. However, the broad nature of the Civil Aeronautics Act and the independence of the CAB gave the Board wide latitude in shaping the air transport system (Cohen 1979, 28).

The principal areas of CAB regulation were entry, exit, routes and pricing. An airline wishing to carry out interstate operations with aircraft larger than a specified threshold was required to obtain from the CAB a Certificate of Public Convenience and Necessity. Each certificate applied to a single route and specified the city end-points of the route together with permissible intermediate stops. The

CAB also controlled the levels of standard fares and discounts and exercised authority of approval over mergers of airline companies. However, it had no powers in relation to schedules, type of aircraft or on-board service (Bailey 1983, 2).

There was a further codification of aviation law in 1958 with the passage of the Federal Aviation Act. This legislation established the Federal Aviation Agency (FAA) which assumed responsibility for air traffic control, safety and other aspects of airline and airport operation in the US.¹ The FAA ceased to be a separate and independent agency in 1966 when it was incorporated into the Department of Transportation and renamed the Federal Aviation Administration (Fradenburg 1980, xvii).

The airline industry grew rapidly in the post-war period. Average traffic growth of 14 per cent per annum between 1949 and 1969 reflected improvements in aircraft technology, higher incomes, time savings associated with air travel and reductions in real fares. Average nominal fares fell by 2 per cent over this period while the consumer price index rose by 50 per cent (Graham & Kaplan 1982, 8).

INDUSTRY STRUCTURE

The CAB used its authority over entry into interstate routes to shape the route networks of the airlines in accordance with its view of the proper role of each carrier group and the needs of individual operators. Its basic aim was to equalise the size of companies and avoid bankruptcies in order to maintain stability in the industry (Meyer 1985, 3).

Trunk airlines

The major markets were reserved for the trunk airlines which initially comprised the 16 carriers operating in 1938. These airlines were automatically given certificates to operate in interstate markets and many other applications to start new airlines to service the major routes were subsequently rejected.² By 1978 the number of domestic

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1. The FAA administered the granting of Federal subsidies to airport authorities for the construction of runways, taxiways and certain types of lighting equipment. It also operated Washington National and Washington Dulles International airports.
 2. Between 1950 and 1974 the CAB received 79 applications from companies wishing to enter the domestic airline industry. None of the applications were granted.

trunks had fallen to 10 due to mergers.³ At this stage the trunks were the only carriers that could operate in all kinds of markets with any aircraft and they owned nearly all of the wide-body equipment. Each of the other groups had restrictions on scheduling, markets or aircraft.

Local service airlines

From the mid-1940s the CAB issued temporary permits for the operation of a new class of carrier called local service airlines. It was intended that these carriers would replace the existing trunk airlines in providing subsidised services to smaller communities. They were limited to non-overlapping regions of the country and provided feeder traffic for the trunks. The Board also placed restrictions on the size and type of aircraft that could be operated by the local service airlines.

Permanent certificates were granted to an initial group of 14 local service airlines in 1955. The ability of these carriers to compete against the trunks was severely restricted by the CAB throughout the 1950s and in the first half of the 1960s. However, in the latter part of the 1960s the CAB allowed them to begin offering non-stop service in many large markets within their regional service areas with the intention that profits earned in large markets would offset losses in small markets. Between 1944 and 1969, 211 points were transferred from the trunk airlines to local service operators (McAvoy & Snow 1977, 83). By the mid-1970s the local service airlines were competing with the trunk carriers in many short and medium haul routes of moderate density (Meyer & Oster 1984, 17). The number of local service airlines fell from 14 in 1955 to eight in 1978.⁴

Other carriers

Supplemental (charter) airlines developed outside of the CAB regulatory structure in the post-war period. In 1962, two of these carriers (World and Capitol) were granted specialised certificates to provide non-scheduled charter services. Five supplemental airlines were operating passenger services by 1978.

-
3. The domestic trunks were United, American, Delta, Eastern, TWA, Continental, National, Northwest, Braniff and Western. Pan Am was also a major carrier at this stage but was limited to international routes.
 4. The local service airlines operating in 1978 were Allegheny, Hughes, Frontier, North Central, Ozark, Piedmont, Texas International and Southern.

Commuter operators were given formal exemption to provide scheduled interstate air services with small aircraft in 1952.⁵ They did not hold a CAB certificate of public convenience and necessity and were free to enter and leave markets provided that certain fitness standards were met. There were no CAB controls over fares. A total of 258 commuter airlines were operating passenger services by 1978.

The final component of the US passenger airline system prior to deregulation was the intrastate airlines.⁶ These carriers operated large aircraft such as the B727 beyond the jurisdiction of CAB regulation in California, Texas, Florida, Alaska and Hawaii. They were regulated by the relevant State governments. The performance of these airlines compared to that of the trunks was an important element in later moves for deregulation.

ROUTES

It was an unofficial policy of the CAB to limit the number of airlines serving any market. From 1938 to 1977 the Board did not permit any new entry into markets that already had two or more carriers and less than 4 per cent of all route applications between 1969 and 1974 were granted (Creager 1983, 328). An airline seeking to start a service had to prove that it would be profitable and not jeopardise the profitability of any existing operation.

The Board also attempted to preserve all of the existing operators and to narrow the differences between the strong and weak carriers by awarding attractive routes to financially weak airlines (Graham & Kaplan 1982, 41).

PRICING

The CAB could suspend any fare which was found to be unjust or unreasonable, unjustly discriminatory, unduly preferential or unduly prejudicial. It also had the power to prescribe a lawful fare.

The Board's primary focus in setting fares was on the airline industry's profitability rather than on the relationship between fares and costs in particular markets. The rigid fare structure enforced by

-
5. Commuters are defined as air taxi operators which perform at least five round trips per week between two or more points and publish flight schedules which specify travel times, days of the week and points served. They operated as air taxis until 1969 when commuter airlines were officially established.
 6. Included PSA, Southwest, Air Cal and Air Florida.

the Board meant that competitors in each market offered virtually identical fares and there were few off-peak concessions. Discounts generally did not exceed 25 per cent of the standard fare and were offered to relatively few passengers. However, airline earnings were generally poor during the period of detailed regulation (Cohen 1979, 28).

In 1960, the CAB implemented a new policy under which fares were determined by a distance-based formula. This moved fares closer to costs in many cases but there were still disparities as market density was not considered and the availability of discount and off-peak fares was reduced. In addition, the fare taper was less steep than the cost taper. This resulted in unprofitable operations on short-haul services and intense service rivalry on long distance routes (Meyer 1985, 3).

COSTS

The system of CAB regulation tended to raise total airline industry costs for a number of reasons.

The awarding of routes to financially weak airlines increased average costs and hence fares by maintaining the position of higher cost operators that would have been forced out of the industry in a more competitive environment. In addition, the efficient airlines were unable to expand at the rate indicated by their more competitive position and the incentive to control costs was reduced.

Tight controls on airline pricing and disparities between fares and costs also encouraged carriers in competitive markets to engage in excessive non-price competition (Bailey 1983, 4). As the CAB did not have powers in relation to scheduling and service levels, carriers competed by providing additional flights and roomier seating. These actions resulted in low average load factors. By 1969, the average load factor of the trunk carriers had fallen to 50 per cent.

The severe restrictions on time-related variations in pricing resulted in relatively high load factors at peak travel times and low load factors on off-peak flights. Different fares for peak and off-peak flights would have been justified by variations in costs in many cases. The rigid fare structure therefore resulted in less efficient utilisation of equipment and lower average load factors than if a more flexible approach had been adopted (Graham & Kaplan 1982, 92).

Labour market developments also contributed to the evolution of a high

cost structure. The regulatory system and the economic characteristics of the aviation industry enabled pilots to capture a considerable share of the cost savings created by labour-saving technological advances, in the form of higher pay and changes in work rules (Graham & Kaplan 1982, 113). Flight attendants and ground crews were also able to obtain parallel improvements in wages and hours together with restrictive and specialised job classifications which tended to increase employment. These gains by labour were more prevalent at the trunk airlines which, for example, operated B737 aircraft with three cockpit crew compared with two pilots used by the small US carriers (Bailey 1983, 4).

The extent to which labour was able to appropriate the benefits of improved technology in the regulated environment was significant. If airline wages had just remained competitive with those in the manufacturing sector of the US economy after 1957, pay per unit of output at local service and trunk airlines would have been 28 and 30 per cent lower respectively than the actual levels in 1982 (Graham & Kaplan 1982, 122).

SMALL COMMUNITY SERVICE

Airlines certificated by the CAB were required to provide adequate service at all points named on their certificates and to provide a specified minimum number of flights at those points which were eligible for subsidy. A carrier could not stop serving a point without CAB approval to either suspend service or delete the community from its certificate (Graham & Kaplan 1982, 42). The Board generally took a restrictive approach to proposals to withdraw all service to a community, and approval was typically only granted when a replacement carrier was arranged.

Financial assistance was provided to certificated airlines operating services to small communities. Subsidy payments to trunk carriers generally ceased in 1959 although Northwest received subsidies for five years in the mid-1960s.

Support was provided to local service airlines under Section 406 of the Civil Aeronautics Act and subsequently the Federal Aviation Act. This programme was designed to cover the difference between the cost of service (including a reasonable return on capital) and revenue as long as some service was provided (Cohen 1979, 36). However, the local service subsidy scheme was oriented towards supporting the overall financial position of any eligible airline which operated some unprofitable services rather than assuring adequate service for

specific communities (Graham & Kaplan 1982, 140). Service frequencies or times were often poor and commuter operators were ineligible for subsidy.

The CAB's decision to subsidise the costs of larger aircraft introduced by local service airlines in the early 1950s contributed to a rise in the cost of the Section 406 programme (Graham & Kaplan 1982, 141-142). Subsidy payments increased from US\$22 million in 1955 to US\$67 million in 1962 but fell to US\$40 million in 1970 in response to the entry of local service airlines into larger markets.

Despite the provision of subsidies, the period prior to deregulation was characterised by a sustained fall in the number of small communities receiving service from trunk and local service airlines. Certificated carriers withdrew from 173 points between 1960 and 1975 (McAvoy & Snow 1977, 83).

There were also problems with the quality of service to communities eligible for subsidy because this factor was not taken into account by the Board. Flights were often operated at inconvenient times of day as the airlines used their aircraft on denser routes during peak travel periods. In addition, the quality of service declined during the period of detailed regulation. Departures fell in 56 per cent of the 197 points that were served by local service airlines in both 1959 and 1969, and service levels declined in 81 per cent of cities with fewer than 50 000 inhabitants over the same period (Graham & Kaplan 1982, 143).

CHAPTER 3 THE PROCESS OF DEREGULATION

Proposals to deregulate the US airline industry were put forward for some time before the Federal Government modified the framework of detailed regulation. There was some relaxation of regulatory policies from 1976 and the passage of legislation in 1978 resulted in a programme of phased deregulation.

PRELIMINARY MOVES FOR REFORM

Proposals that airline deregulation would benefit society as a whole dated back to at least 1962 when Richard Caves published a book which argued that the airline industry was workably competitive in the absence of detailed regulation (Caves 1962).

Supporters of reform argued that the airlines had been encouraged to provide more expensive service than travellers wanted and that they had high cost structures. It was also claimed that carriers operating outside the CAB's jurisdiction had much lower fares than those in comparable regulated markets. For example, Levine and Jordan concluded that PSA, a California carrier that had never been regulated by the CAB, had fares which were 50 per cent below those charged by the regulated carriers over similar distances (Moore 1984, 4). It also had much higher load factors, was more efficient and was highly profitable. Similarly, a General Accounting Office study based on a comparison of regulated carriers with intrastate operators claimed that CAB regulation had cost US passengers nearly US\$2 billion per annum in higher fares between 1969 and 1974 (Meyer et al. 1981, 47-48).

Opponents of reform claimed that deregulation would have adverse effects on the air transport system. It was alleged that deregulation would severely strain the domestic air transport system, reduce service to small communities and disrupt the integrated air transport network. There were also claims that deregulation would result in destructive competition which would ultimately lead to widespread monopoly power shared by a small number of remaining airlines. The experience of the intrastate carriers was not considered to be

relevant to interstate services as these airlines operated under unique conditions including good weather, no interline facilities and high density seating configurations for short-haul routes.

Government attitudes

US Government interest in reduced regulation was first highlighted in the 1965 annual report of the Council of Economic Advisers (Moore 1984, 5-8). Later reports by this body identified problems of excess capacity, high fares and low profitability in the regulated industry. In 1975, reports by the CAB and the Senate Sub-Committee on Administrative Practice and Procedure called for regulatory reform to increase competition in the industry. By 1977 there was a wide range of individuals and organisations lobbying for a reduction in airline regulation. They included Pan Am, Frontier, Hughes Air West, United, PSA and other carriers which considered that a deregulated environment would provide greater opportunities for profitable expansion.¹

The CAB was also convinced that regulatory reform was desirable. It therefore moved to adopt more liberal regulatory policies within the existing framework from 1976 and sent legislation to Congress. Most restrictions on charter operations were abolished in 1976 and 1977, and substantially more permissive policies toward route entry and exit by scheduled carriers were introduced in 1977. The Board approved the offering of heavily discounted fares by scheduled carriers in 1977 so that they could match the lower charter fares. In the following year carriers were permitted to set fares up to 70 per cent below and 10 per cent above the standard coach (economy) formula fare. These policy changes substantially reduced regulation of services and fares for existing carriers but new airlines were still unable to enter the industry (Meyer 1985, 4).

By 1976 there were three proposals for regulatory reform under consideration by Congress. One was supported by the Ford Administration, another was sponsored by Senator Edward Kennedy and the third was a CAB bill.

Air cargo

The legislation relating to air cargo was separated from the rest of the reform bill in 1977 and passed later in the year. It eliminated territorial restrictions in the lower 48 States for existing air freight carriers and required the certification of any 'fit, willing

1. United had not received a major new route for about eight years.

and able' applicant after November 1978. Rates were deregulated although there were requirements for filing and prohibitions against unjust discrimination, predatory practices, undue preference and deceptive practices. In March 1979 the CAB abolished the requirement to file rates on the grounds that it facilitated collusion.

The available information indicates that freight rates rose in line with costs after deregulation and that many communities received better service. Rates for some specialty items increased sharply and liability requirements changed (Moore 1984, 12). A number of specialist freight carriers significantly expanded their operations, with United Parcel Service buying four B747 freighters from American and Emery Air Freight acquiring 10 additional DC8 freighters during 1984 (Prebble 1984). Several trunk carriers such as United subsequently reduced or eliminated their dedicated freight operations as a result of the more restrictive aircraft noise regulations which became effective on 1 January 1985.

THE AIRLINE DEREGULATION ACT

Legislation affecting the passenger market was enacted in October 1978 when the Airline Deregulation Act (ADA) was signed into law by President Carter.

The basic aim of the ADA was to 'encourage, develop and attain an air transportation system which relies on competitive market forces to determine the quality, variety and price of air services...' (United States Code 1978, 1705). The Act proposed a phased reduction and removal of CAB regulation.² It substantially liberalised provisions on entry and pricing and made it easier for carriers to stop serving unprofitable markets. Other provisions covered matters such as safety, insurance and liability, fill-up rights for international flights, mergers and control, carrier agreements, Presidential review of international route cases, government guarantee of equipment loans and an Employee Protection Programme. A Federal pre-emption clause also prevented State governments from regulating the fares, routes and services of certificated interstate carriers.

Entry, exit and route authority

The ADA liberalised the previous entry test which required the

2. The domestic airline industry was to be officially deregulated by 1983. However, the airlines were operating in a functionally deregulated environment by mid-1979.

applicant to be fit, willing and able and to prove that the proposed transport service was required by the public convenience and necessity. Entry was now presumed to be in the public interest and those opposed to entry in a particular case had to show that it was not consistent with public convenience and necessity.

The Act initially granted a limited degree of automatic entry which did not require CAB review or approval, with each certificated carrier being able to enter one new market a year between 1979 and 1981. Each carrier was permitted to protect one route each year from automatic entry over this period. There was also an unused route authority provision which, in the case of scheduled services, stated that a carrier could serve a particular route if another airline certificated for that route had not been providing a minimum of five round trips per week pursuant to published schedules for at least 13 weeks during any 26 week period. However, in practice there was effective deregulation of entry in April 1979 (Ellison 1982, 61).

Market exit was also generally made easier but notice procedures were set down. A certificated carrier intending to discontinue non-stop or single plane service to a community was required to provide 60 days' notice of its intention, while 90 days' notice was required prior to termination of all service or reduction of service below an essential level.

The ADA ended the CAB's authority over routes on 31 December 1981.

Fares

The Act initially set a statutory zone of reasonableness for fares which was to be adjusted by the CAB as airline costs changed. Carriers were permitted to raise fares up to 5 per cent above the standard industry fare level (SIFL) or lower them as much as 50 per cent below the SIFL without CAB approval.³ This was similar to the policy that the Board had already adopted. In May 1980, the zone of reasonableness was extended to give carriers unlimited downward flexibility and expanded upward flexibility (Graham, Kaplan & Sibley 1983, 119).

The Act also specified factors which were to be taken into account by the CAB when exercising its powers and duties with respect to fares. These included the desirability of a variety of price and service

3. The SIFL was a formula fare based on average industry costs and distance.

options to improve economic efficiency and provide low-cost air service. The CAB's authority over fares ended on 1 January 1983.

Small community service

The ADA established an Essential Air Services Programme (EASP) which guaranteed essential air transportation for 10 years to the cities listed on air carriers' certificates on the date the Act was passed. Essential service was generally defined as:

scheduled air transportation of persons to a point provided under such criteria as the Board determines satisfies the needs of the community concerned for air transportation to one or more communities of interest and insures access to the Nation's air transportation system, at rates, fares, and charges which are not unjust, unreasonable, unjustly discriminatory, unduly preferential or unduly prejudicial, and ...(outside Alaska) in no case shall essential air transportation be specified as fewer than two daily round trips, five days per week, or the level of service provided by air carriers to such point based on the schedules of such air carriers in effect for calendar year 1977, whichever is less... (United States Code 1978, 1739).

The EASP authorised a subsidy programme (under Section 419 of the Act) which set the compensation level on the basis of community needs and the use of appropriate aircraft. There was also provision for the maintenance of essential air services to the 137 points which were deleted from carriers' certificates between 1 July 1968 and the enactment of the ADA.⁴ The existing subsidy scheme for local service airlines was to continue until 1985.

Where an airline proposed to reduce its operations to a community below the level of essential air service, the EASP empowered the CAB to force the incumbent to continue service until a replacement was found. If the existing operator suffered a financial loss as a result of staying in the market, the Board was required to provide a temporary subsidy while it requested bids from airlines willing to operate the route. This involved a subsidy contract that specified minimum frequencies and seat numbers for two years after which other carriers could submit competitive service-subsidy bids.

4. By the end of 1981, only seven points had been admitted to the programme under this provision.

The ADA made commuter airlines eligible for direct operating subsidies and aircraft loan guarantees for the first time.⁵ It also included them in joint-fare agreements with certificated airlines and increased the size limit on commuter aircraft from 30 to 60 seats. However, in contrast to the other sectors of the industry, there was an increase in the regulation of commuter airlines. They were now required to provide notice of their intention to terminate service to a community and the compulsory service provisions also applied, whereas previously they had been free to exit markets as they wished.

Remaining regulation and the CAB

Although the ADA essentially left the airlines free to determine the routes they served and the prices they charged, it did not completely remove regulatory authority.

Operators of large aircraft on interstate services still had to be certificated and they had to be found fit, willing and able to operate services properly. The CAB continued to have responsibility for international negotiations and the administration of anti-trust authority over mergers, discriminatory pricing and carrier agreements in the airline industry. The EASP maintained some controls over services to small communities. Commuter airlines were subject to closer operational scrutiny by the CAB and their movement out of markets was now controlled.

There were also provisions for consumer protection such as the payment of compensation if confirmed reservations were not honoured and the availability of non-smoking sections on aircraft. The FAA continued to control safety aspects.

The ADA provided for the CAB to cease operations on 1 January 1985 when its major remaining functions were to be transferred to the Transportation and Justice Departments. The Civil Aeronautics Board Sunset Act was subsequently passed by the Senate in August 1984. This Act transferred all remaining CAB functions to the Department of Transportation which on 1 January 1985 became responsible for continuing fitness evaluations of carriers, administration of the EASP and approval of mergers and agreements among airlines. It also gave

5. Local service airlines had been eligible for equipment loan guarantees since 1957. The guarantees were designed to enhance the ability of these airlines to tap the capital market by guaranteeing 90 per cent of the private loans granted for the purchase of new aircraft (including spare parts) and 100 per cent of any unpaid interest.

the Department broad powers to enforce regulations over consumer matters such as overbooking, discrimination against the handicapped, lost and damaged baggage claims and terms of charter service.

Passage of this legislation was deemed necessary because the consumer protection authority of the CAB had not been adequately addressed in the ADA. It was argued that, in the absence of further legislation, all existing consumer protection regulations would be based on doubtful statutory authority and be subject to court challenge after 31 December 1984.

CHAPTER 4 FACTORS AFFECTING THE ASSESSMENT OF DEREGULATION

Deregulation has been accompanied by substantial changes in the structure and operation of the US airline industry. It has provided greater flexibility in areas such as pricing and route structures as well as facilitating the entry of new carriers that have innovative approaches to airline operation.

An assessment of the impact of deregulation should ideally involve a comparison of the situations with and without the regulatory changes. However, in practice the evaluation has to be based on a comparison of the industry before and after deregulation. Several other developments significantly affected the US airline industry after 1978, and in many cases there is considerable difficulty in identifying the extent to which changes in the industry resulted from deregulation or these other factors.

ECONOMIC CONDITIONS

When the ADA was passed in 1978, the US economy was growing strongly. However, performance subsequently deteriorated as a result of factors such as higher oil prices. Information on changes in real Gross Domestic Product (GDP), consumer prices and interest rates in the US between 1978 and 1984 is presented in Table 4.1.

Real GDP increased by 5.0 per cent in 1978 but the rate of growth fell to 2.8 per cent in 1979. There were absolute declines in GDP in 1980 and 1982, with a modest recovery in the intervening year. Sustained economic recovery was established in 1983 and there was rapid growth in 1984.

Inflation and interest rates also deteriorated after 1978. The rate of inflation increased from 7.7 per cent in 1978 to a peak of 13.5 per cent in 1980 but then fell to 4.3 per cent in 1984. The prime rate more than doubled from 9.1 per cent in 1978 to 18.9 per cent in 1981. Although the nominal interest rate subsequently declined to 12.0 per cent in 1984, the real rate was much higher than that at the beginning of the period.

TABLE 4.1 ECONOMIC CONDITIONS IN THE US, 1978 TO 1984
(per cent per annum)

Year	Change in real GDP	Change in CPI ^a	Prime rate ^b
1978	5.0	7.7	9.1
1979	2.8	11.3	12.7
1980	-0.3	13.5	15.3
1981	2.5	10.4	18.9
1982	-2.1	6.1	14.9
1983	3.7	3.2	10.8
1984	6.8	4.3	12.0

a. US consumer price index

b. The prime rate is theoretically the lowest loan interest rate charged by US banks to their best-rated corporate customers.

Source Council of Economic Advisers (1985).

These developments had a significant effect on the US airline industry. Traffic is sensitive to economic conditions and in particular to the level of economic activity. Table 4.2 shows that domestic passenger traffic grew rapidly up to 1979 but then declined in the following two years as the economy went into recession. It started to grow again in 1982 and was still rising in the first half of 1985 when traffic carried by the major and national carriers was 15.2 per cent higher than the level for the corresponding period in 1984 (*Aviation Daily*, 27 August 1985).

The changes in inflation and interest rates after 1978 also affected factors such as airline cost structures. For example, the increases in interest rates after 1978 probably added around US\$300 million to airline costs in 1984.¹

FUEL PRICES

The second major development which affected the US airline industry after 1978 was the large increase in fuel prices. Information on the price of aviation fuel during the period from 1978 to 1984 is presented in Table 4.3 which indicates that the average price paid by US airlines increased by 164 per cent between 1978 and 1981. Easier

1. Computed from data in Air Transport Association (1980, 1984).

TABLE 4.2 DOMESTIC SCHEDULED TRAFFIC CARRIED
BY CERTIFICATED US AIRLINES, 1976
TO 1984

(billion revenue-passenger miles)

<i>Year</i>	<i>Traffic^a</i>
1976	148.4
1977	160.5
1978	187.2
1979	208.6
1980	199.6
1981	197.5
1982	208.2
1983	223.3 ^b
1984	242.0 ^b

a. Excludes commuters.

b. Computed by subtracting US carriers' international traffic from total traffic carried by US scheduled airlines which are members of the Air Transport Association.

Sources Civil Aviation Authority (1984, 8).
Aviation Daily (4 April 1984, 26
March 1985, 21 June 1985).

TABLE 4.3 AVERAGE FUEL PRICE PAID BY US
AIRLINES, 1978 to 1984

(cents per gallon)

<i>Year</i>	<i>Fuel price^a</i>
1978	39.7
1979	56.3
1980	88.1
1981	104.7
1982	98.9
1983	86.8
1984	83.5

a. Average for majors, nationals and regionals on domestic and international routes. Prices are annual averages except for the 1983 and 1984 figures which are December prices.

Source *Air Transport World* (May 1985, 51).

conditions on the international oil market resulted in price falls over the following three years, but by 1984 the price of aviation fuel was still 110 per cent higher than the level in 1978.

The airlines responded to these developments by adopting various measures to improve the fuel efficiency of their aircraft and reduce the impact of fuel costs. However, the higher prices did result in significant increases in operating costs. The rise in fuel prices between 1978 and 1980 resulted in an increase of around 17 per cent in overall operating costs over this period.² It also caused an estimated 25 per cent of the trunk carriers' capacity and 18 per cent of the local service airline fleets to become economically obsolete (Meyer et al. 1981, 188).

OTHER DEVELOPMENTS

The US airline industry was also affected by problems with the DC10 aircraft and the air traffic control system after 1978.

The grounding of all DC10 aircraft in June and July 1979 and the subsequent problems of passenger resistance affected the capacity and cost structures of existing carriers. Airlines were forced to increase their use of less fuel efficient equipment such as the B707 and this tended to increase operating costs. However, these effects were temporary as the bad reports about the DC10 subsequently subsided and the less fuel efficient aircraft were replaced by more modern equipment.

The strike by members of the Professional Air Traffic Controller's Organisation (PATCO) in 1981 and the subsequent dismissal of 70 per cent of US air traffic controllers affected the industry for several years. The Federal Aviation Administration curtailed operations at 22 of the largest airports and carriers were also prevented from adding flights at non-restricted airports.³ In September 1981, total aircraft operations at the restricted airports were set at 15 per cent below the level in the previous year, but by January 1982 the reduction was only 4 per cent (Meyer & Oster 1984, 180). These events probably slowed the changes that resulted from deregulation by limiting new entry or expansion of services in some markets and

2. Computed from data in Air Transport Association (1980, 1981).

3. Quotas had also been applied since 1966 at O'Hare (Chicago), La Guardia (New York), Kennedy (New York) and National (Washington) airports.

discouraging carriers from reducing services in unprofitable markets due to the loss of slots.⁴

LONG-TERM TRENDS

The structural, financial and service changes which have accompanied deregulation are described in the following three chapters. The discussion covers developments up to 1985.

In considering the effects of deregulation, it is important to emphasise that the US airline industry is still in an evolutionary phase. Further changes are likely in the longer run and hence at this stage any assessment must be of an interim nature.

A number of observers have forecast that some of the recent trends in the US airline industry will not be sustained in the long run. For example, it has been claimed that the increase in the number of carriers and the loss of market share by the larger operators will be reversed in future, with many smaller carriers being forced out of the industry and the major airlines resuming their traditionally more dominant position. One view is that this will lead to the evolution of a workably competitive oligopoly, with four or five large airlines competing on the major routes and other specialised 'niche' carriers expanding when given the opportunity (Meyer 1985, 25). Some caution should therefore be used in applying recent changes to predict future trends in the US airline industry.

4. An airport slot is the amount of time allocated for an aircraft to occupy a runway during take-off or landing.

CHAPTER 5 STRUCTURAL EFFECTS OF DEREGULATION

The structural effects of deregulation include the entry of new carriers into the airline industry, adjustments to route networks, increased competition and changes to the sales and reservations system.

NEW ENTRANTS

One of the most visible effects of deregulation has been the entry of new carriers into interstate markets from which they were previously excluded by the CAB. The new entrants include former intrastate airlines, former commuter carriers, newly formed airlines and former supplemental operators.

Table 5.1 indicates that there was substantial growth in the number of airlines certificated by the CAB after 1978. These figures probably overestimate the growth in the number of carriers operating services as they include some newly formed airlines which were not in operation.¹ However, the proportion of total US domestic revenue-passenger miles performed by the new entrants rose from 3.8 per cent in 1976 to 8.6 per cent in 1982 (Bailey 1983, 11).

Growth in the number of certificated carriers has occurred despite the withdrawal of some airlines from the industry. If all of the carriers certificated after the passage of the ADA were still in business, there would now be 170 airlines providing scheduled interstate services with large jet aircraft (Ott 1985, 214). Carriers have left the industry as a result of poor profitability and have either been taken over, merged with other carriers or simply ceased operations.²

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1. For example, in January 1983 there were 14 newly formed carriers which had not yet commenced operations as well as 30 applications under consideration by the CAB.
 2. For example, Southwest has merged with Muse and Midway has acquired Air Florida. People Express has acted to acquire Frontier while Piedmont has proposed the takeover of Empire. Ozark has also been identified as a takeover target.

TABLE 5.1 NUMBER OF CERTIFICATED US
CARRIERS, 1976 TO 1984

<i>Year</i>	<i>Number of carriers</i>
1976	37
1977	37
1978	37
1979	53
1980	63
1981	71
1982	93
1983	96
1984	123

Sources *Aviation Daily* (13 December 1984).
Air Transport Association (1984, 1).

The entry of newly formed airlines into the industry has been one of the most widely-reported results of deregulation. The first newly formed airline commenced operations in November 1979 and by January 1983 22 such operators had entered the industry.³ These carriers vary in size from operators of two aircraft such as Best to People Express which has more than 40 aircraft. By 1982 they accounted for 1.7 per cent of the revenue-passenger miles provided by domestic scheduled carriers (Civil Aviation Authority 1984, 9 and 13). However, the impact of these carriers on the performance of the US airline industry has been much greater than indicated by their relatively modest share of overall traffic. For example, People Express has had significant effects in the markets that it has entered as well as demonstrating the viability of the broader market for low-fare, no-frills services.

The aim of each new entrant is to identify and fill a viable niche in the airline market. The strategies used to achieve this goal are discussed in later sections of this Paper, but it is important to note that the new entrants have adopted a variety of approaches. Although low-cost, no-frills service is probably the most popular and widely-publicised strategy, some new entrants offer full service and

3. The newly formed airlines include Air One, Midway, People Express, New York Air, Muse Air, Jet America, Pacific Express, Northeastern, Best, Emerald, Hawaii Express, Pacific East and Regent Air.

facilities. In addition, a number of pure first class airlines have been established. For example, Air One was formed as a first class service carrier which charged standard fares and operated B727-100 aircraft with 76 seats instead of the standard 118 seats used by People Express (Taneja 1985, 44 and 51). The extent to which the new entrants compete with the established airlines varies in response to different route, service and fare strategies.

New entry appears to have been facilitated by the extension of the Aircraft Loan Guarantee Programme. This scheme lowered interest rates paid by new entrants by up to 4 percentage points, extended loan terms and made finance possible where it had previously not been available (Meyer & Oster 1984, 112). Between October 1978 and January 1982, guarantees were provided for the purchase of 61 aircraft (US\$100 million) by commuter airlines and 64 aircraft (US\$583 million) by other carriers. In the latter case, more than 85 per cent of the amount involved new entrants with Piedmont being the only established carrier to make use of the programme. However, additional loans for new entrants were eliminated in 1982 by the imposition of a US\$100 million budget ceiling and the limitation of eligible aircraft to those with less than 60 seats. This change may limit the rate of new entry in future.

At least one observer has noted that there has recently been a significant reduction in the number of newly formed carriers entering scheduled interstate airline markets (Ott 1985, 214). There has also reportedly been a growing number of bankruptcies among the smaller and newly formed carriers. One view is that these trends will eventually result in a significant reduction in the number of airlines.

ROUTE NETWORKS

Deregulation has also been accompanied by significant changes to airline route networks as carriers are now free to adjust their operations in response to market opportunities and changes in conditions. Between 1977 and mid-1985 there were approximately 3300 market entries and 3000 exits by US airlines operating aircraft with 40 seats or more. Around 24 per cent of city pairs served in 1982 did not receive service in 1978, and 28 per cent of those served in 1978 no longer received non-stop service in 1982 (Boeing 1985, 5 and 16).

Established carriers

Table 5.2 indicates that between 1978 and 1982 total traffic carried by the former trunk airlines declined and their share of domestic

revenue-passenger miles fell from 87.7 per cent to 78.6 per cent.⁴ This trend reflected moves by these carriers to pull out of many shorter haul markets and concentrate their activities on longer and denser routes to which their aircraft were best suited. For example, United withdrew from routes under 200 miles and increased its average route length from 750 to 900 miles. In addition, the former trunk carriers' routes provided the greatest opportunities for expansion by the other operators of large jet aircraft.

Deregulation has also facilitated the expansion of the former local service carriers. They increased their share of total revenue passenger-miles from 8.8 per cent to 12.9 per cent between 1978 and

TABLE 5.2 US DOMESTIC SCHEDULED SERVICES BY CARRIER GROUP, 1978 AND 1982

Carrier group	Revenue passenger miles (billion)		per cent of total	
	1978	1982	1978	1982
Trunk	164.2	163.7	87.7	78.6
Local	16.5	26.8	8.8	12.9
Intrastate	4.6	7.9	2.5	3.8
Newly formed	0	3.5	0	1.7
Other ^a	1.9	6.3	1.0	3.0
Total	187.2	208.2	100.0	100.0

a. Includes services of previous charter carriers and larger regional or commuter airlines which reported traffic data to the CAB as certificated carriers.

Source Civil Aviation Authority (1984, 9).

4. The abolition of detailed economic regulation removed the basis for the existing carrier classification system and hence new categories based on size were introduced by the CAB. The majors were defined as carriers with turnover in excess of US\$1 000 million and initially comprised nine former trunks and several former local service airlines. Piedmont joined this group in 1985. The nationals have turnover between US\$100 million and US\$1 000 million and comprise Braniff, the remaining former local service airlines, some former intrastates and some old charter airlines. The regionals have turnover under US\$100 million and include some of the former commuters. Regionals operating aircraft with 60 seats or less are classified as commuters. The Air Transport Association uses a figure of US\$75 million rather than US\$100 million in its definitions of national and regional carriers.

1982. The two-engined jet aircraft which the local service carriers inherited from the period of detailed regulation were well-suited to an environment of higher fuel prices and could be operated efficiently on many of the longer routes from which these carriers were previously excluded. The local service airlines were also able to take advantage of the feed from their regional networks to expand into the longer, denser markets traditionally served by the trunks. They more than doubled the proportion of their revenue passenger-miles performed in markets between 500 and 1000 miles, and routes over 1000 miles (from which they were previously excluded) accounted for nearly 11 per cent of their revenue passenger-miles by 1981 (Bailey 1983, 6).

The established carriers have increased their reliance on hub-and-spoke networks. Table 5.3 shows that the number of former trunk and local service airlines with 20 per cent or more of their total domestic departures out of their lead city increased from three in 1978 to 10 in 1981. Hubbing provides advantages such as savings in aircraft and fuel and an increase in the number of possible on-line

TABLE 5.3 GROWTH OF HUB-AND-SPOKE NETWORKS, 1978 TO 1981
(per cent)

<i>Airline</i>	<i>Proportion of departures at leading hub</i>	
	<i>1978</i>	<i>1981</i>
American	12	20
US Air	16	21
Braniff	26	36
Continental	17	30
Delta	18	23
Eastern	18	23
Frontier	19	25
Northwest	17	16
Ozark	15	23
Pan Am	12	16
Piedmont	4	9
Republic	5	6
Texas International	21	23
TWA	12	16
United	14	17
Western	20	21

Source Graham & Kaplan (1982, 49).

markets available to a carrier's passengers, but also imposes costs in the form of peakiness of traffic and possibly congestion at the hubs.⁵ In addition, it has been argued that hub-and-spoke systems involve less than optimal use of the large aircraft operated by the trunks and that they are less convenient for passengers than non-stop flights.

At least one observer has forecast that the trend to hub-and-spoke networks at large airports will be reversed in future due to congestion and consumer opposition to aircraft transfers (Ott 1985, 214). It has also been claimed that the general tendency toward hub-and-spoke operations may be a transient situation caused by the current excess of wide-body and other older aircraft which are particularly suitable for these networks (Meyer 1985, 14). The airlines' best flyover aircraft such as the B707 and the DC8 were retired early due to the increase in fuel prices, and the emergence of a new generation of smaller aircraft could reduce the attractiveness of hub-and-spoke operations.

There has been an increase in co-operative arrangements between the larger carriers and commuter operators. A number of commuters have become exclusive feeder lines for these airlines in exchange for assistance such as booking facilities and space at airport gates. Some of the commuter airlines trade under the names of the larger carriers with which they are associated.

Some observers initially forecast that deregulation would result in the replacement of the large airline networks by a system of unintegrated linear routes.⁶ This was expected to raise overall costs as the large networks were considered to be more efficient for a variety of reasons such as economies of scale and scope and lower information costs. In practice, deregulation has not resulted in the destruction of the integrated network and, although the system has been weakened, it is reportedly adequate to satisfy public needs (Levine 1985, 7).

New entrants

The new entrants have generally concentrated on short and medium haul markets involving large or medium hubs where traffic densities are

5. On-line markets involve connections through intermediate points on the same airline.

6. For example, see Lazar (1984).

high.⁷ The major exception to this trend is the former supplemental airlines which have continued to operate on long-haul routes.

Most of the flight segments operated by the new entrants are less than 500 miles and very few are over 750 miles. This reflects the range limitations of the two-engine aircraft used by many of these carriers and the unattractiveness of the longer and denser markets due to the competitive conditions resulting from an excess supply of wide-body aircraft. By March 1982, new entrants had moved into 19 of the 37 routes between large hubs under 500 miles and 26 of the 65 routes under 750 miles (Meyer & Oster 1984, 208). There is reportedly potential for some further entry in these market categories.

The operations of the new entrants also have several other characteristics. They generally involve markets with a high proportion of discretionary travellers and connections to other carriers' networks are often limited. A number of new entrants operate single or multiple hub systems.

Effects on airports

These developments have been accompanied by significant congestion at a number of major airports. There has been pressure on landing and take-off slots, aircraft parking stands and terminal space. These difficulties have probably encouraged some new entrants to base their operations at alternative airports and prevented others from entering the industry or expanding as quickly as they would have liked. Options proposed to solve the problems include agreements between incumbent airlines to rationalise peak period operations, FAA restrictions on operations and creation of a market for the buying and selling of slots.⁸

The increase in airport congestion is the result of several factors including the rapid growth of airline traffic since 1981, the

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7. There are 16 029 airports in the US of which 5987 are open to the public. The FAA divides the larger airports into four categories on the basis of annual enplanements. The 24 major hubs each account for at least 1 per cent of total enplanements (or 3.2 million passengers in 1983). The 36 medium hubs involve 0.25 to 0.99 per cent (800 000 to 3.2 million), the 71 small hubs 0.05 to 0.249 per cent (160 000 to 800 000) and the 503 non-hubs less than 0.05 per cent (less than 160 000).
 8. Between May and June 1982 airlines were allowed to buy and sell slots outright. There were 194 slots sold at prices up to US\$360 000 and a further 120 were exchanged. Sales generally involved the transfer of slots from commuter operators to major airlines.

establishment of new carriers, expansion of hub-and-spoke operations and shortages of air traffic controllers. The net effect of deregulation on congestion is difficult to determine. It may have intensified congestion by permitting faster and more intensive development of hub-and-spoke networks, but there is also evidence to suggest that the type of aircraft available have had a substantial effect in this area. Deregulation may have reduced congestion by encouraging the use of secondary airports and stimulating more off-peak services through the expansion of time-related fare concessions. One observer has concluded that deregulation might have been responsible for as much as one-half of the 50 per cent increase in system-wide delays since the end of the PATCO strike (Meyer 1985, 22).

In August 1984, the FAA warned of new controls over airline flight times unless carriers volunteered to introduce schedule changes and reduce flights during congested periods at six airports. It also issued a proposed rulemaking that asked airlines to stop grouping flights in congested periods at certain airports or face FAA allocation of flights, but supported the trading of airport slots as a longer-term solution (*Aviation Week and Space Technology*, 20 August 1984). Twenty carriers subsequently organised to oppose government involvement in scheduling regulation.

In September 1984, the airlines negotiated voluntary scheduling adjustments amongst themselves in an attempt to eliminate peaking problems and reduce the associated delays at a number of major airports. These activities, together with modifications to the air traffic control system undertaken by the FAA, contributed to a significant reduction in delays and permitted the FAA to lift detailed flight scheduling restrictions at six major airports (Shifrin 1985d).

The persistence of congestion to some extent reflects the lags involved in planning and implementing remedial measures. Delays should be reduced in the long run as there are significant incentives for airlines, airport authorities and other bodies to expand airport facilities and find other ways of reducing congestion. A plan prepared by the FAA has proposed the expenditure of up to US\$18.3 billion by 1993 on airport development projects that are potentially eligible for federal funding under the Airport Improvement Programme (*Aviation Daily*, 20 August 1985). Around US\$12.5 billion would involve projects for increasing capacity and expanding the system. Proposed developments include four new major airports and 66 new reliever facilities.

COMPETITION

Since 1978, there has been a significant change in the level and nature of competition in the US airline industry. The relationship between the airlines and other transport services may also have been affected.

Airline competition

Deregulation has resulted in a substantial increase in the overall level of competition in the US airline industry. Several factors have contributed to this trend.

The transfer of control over pricing from the CAB to the airlines has permitted operators to expand their competitive strategies. It appears that price is a more effective weapon than the changes in frequency and service quality which were the instruments of competition under the system of detailed regulation. Developments such as price wars on transcontinental routes and the increased availability of discount fares illustrate the important effects of pricing freedom.

The relaxation of controls on entry has also contributed to increased levels of competition by enabling more carriers to operate on various routes. Between 1978 and 1981, 122 of the 200 most heavily travelled markets registered the entry of at least one additional carrier while in a sample of smaller markets there was entry in 24 per cent of cases (Graham & Kaplan 1982, 53). New services have been provided by established carriers adjusting their networks and by new entrants.

Table 5.4 indicates that the number of carriers operating non-stop

TABLE 5.4 CHANGE IN AVERAGE NUMBER OF OPERATORS PROVIDING NON-STOP SERVICE WITH LARGE AIRCRAFT BY MARKET SIZE, 1978 TO 1981
(per cent)

Distance (miles)	Passengers per day		
	10-200	200-500	Over 500
0-500	-3.1	7.4	13.0
500-1500	17.1	13.9	27.4
Over 1500	11.8	0.0	12.0

Source Graham & Kaplan (1982, 54).

is various powers to control anti-competitive practices and facilitate new entry.

Inter-modal competition

Developments in the airline industry associated with deregulation may have affected the distribution of traffic between air transport and other modes. Expanded use of discount fares and the introduction of new price-quality packages would be expected to attract some travellers from alternative modes or stimulate responses by operators of competing services.

Data on inter-city passenger travel in the US in 1978 and 1984 are presented in Table 5.7. Air transport had the fastest growth in traffic over this period and its share of inter-city passenger travel increased from 13.2 per cent to 14.3 per cent. This continued the upward trend in the proportion of inter-city passengers travelling by air, the figure having risen from 10.0 per cent in 1973 (Air Transport Association 1984, 7).

SALES AND RESERVATIONS SYSTEM

Deregulation has been accompanied by significant developments in the ticket sales and reservations system. These include changes in the position of travel agents and attempts to remove alleged bias in the computer reservations system.

Travel agents

By the 1960s, travel agents accounted for around 40 per cent of

TABLE 5.7 INTER-CITY PASSENGER TRAVEL IN THE US BY MODE, 1978 AND 1984

Mode	<i>Passenger-miles (billion)</i>		<i>Change (per cent)</i>
	1978	1984	
Air	183	250	37
Rail	10	6	-40
Bus	25	27	8
Car	1 162	1 465	26
Total	1 380	1 748	27

Source Air Transport Association (1980). *Aviation Daily* (21 June 1985).

agreements would be reached with the other operators of computerised reservations systems.

Despite these changes, there was still concern about factors such as access fees, hidden bias, continued bias on primary screens and inadequate access to marketing data. For example, a study prepared for the 11 carriers concluded that the internal rates of return for the United and American systems were 160.5 per cent and 65.7 per cent respectively. These were well above the estimates of 20.6 per cent and 27.5 per cent provided by the two airlines (*Aviation Daily*, 13 June 1985).

CHAPTER 6 FINANCIAL EFFECTS OF DEREGULATION

The financial effects of deregulation include changes in costs, pricing and profitability as well as the impact on labour.

COSTS

Deregulation has been accompanied by substantial changes in the structure and level of airline costs. Table 6.1 indicates that average operating costs per revenue passenger-mile fell steadily in real terms between 1974 and 1979. There was a significant reversal of this trend in 1980 and 1981, the cost increases in these two years probably reflecting the impact of higher fuel prices and delays by the airlines in adjusting their operations to lower traffic levels. Real operating costs resumed their downward trend in 1982. These developments resulted in a 9.7 per cent reduction in real average operating costs per revenue passenger-mile between 1978 and 1984. This decrease was achieved despite substantial increases in fuel costs over the period.

The reductions in real operating costs reflect several broad developments in the US airline industry as well as the impact of new entrants.

Broad developments

The increased operating flexibility available to operators in the less regulated environment appears to have facilitated an increase in load factors (Graham & Kaplan 1982, 166-171). Table 6.2 indicates that passenger load factors on domestic services increased significantly after 1976. The average load factor rose from 53.3 per cent over the seven years to 1977 to 59.1 per cent in the seven years from 1978. The load factors of the trunk airlines in 1980 and 1981 were higher than those achieved in all but one year between 1960 and 1978. Short-run fluctuations in load factors partly reflect the impact of changes in the level of economic activity.

There have also been improvements in daily aircraft utilisation rates

TABLE 6.1 AVERAGE OPERATING COSTS FOR US SCHEDULED AIRLINES,
1974 TO 1984
(cents per revenue passenger-mile)

Year	Average costs ^a	
	Nominal	Real ^b
1974	8.6	8.6
1975	9.4	8.6
1976	9.4	8.1
1977	9.8	8.0
1978	9.5	7.2
1979	10.3	7.0
1980	13.3	8.0
1981	14.9	8.1
1982	14.3	7.3
1983	13.7	6.8
1984	13.7	6.5

a. Total operating expenses divided by total revenue passenger-miles for both domestic and international operations. Costs include expenses for flying operations, maintenance, general services, administration, depreciation and amortisation but exclude interest payments.

b. Deflated using US consumer price index with 1974 = 100.

Sources Air Transport Association (1984). *Aviation Daily* (21 June 1985).

and increases in seating densities. For example, Delta implemented a programme to increase aircraft seating capacity which resulted in the addition of 1969 seats, or the equivalent of 13 B727-200s to its fleet (Delta Air Lines 1984, 9). In addition, deregulation has facilitated the use of more appropriate aircraft in cases such as services to small communities.

Operating costs have also been significantly affected by reductions in wages and changes in work practices. The new entrants often have relatively low labour costs and the large airlines have responded with measures to lower their own labour costs. These developments are discussed in detail in the following section.

Developments in load factors, aircraft utilisation and other areas have contributed to an improvement in productivity performance. Caves, Christensen and Tretheway (1983) concluded that total factor productivity growth accelerated from 2.8 per cent per annum between

TABLE 6.2 PASSENGER LOAD FACTOR ON US
DOMESTIC SERVICES^a, 1971 TO 1984
(per cent)

<i>Year</i>	<i>Load factor</i>
1971	48.0
1972	52.1
1973	51.6
1974	55.5
1975	54.6
1976	55.5
1977	55.8
1978	61.0
1979	62.7
1980	57.9
1981	57.1
1982	58.5 ^b
1983	59.6
1984	57.2

a. Covers trunk and local service carriers up to 1982 and majors and nationals in 1983 and 1984.

b. 12 months ended 30 June.

Sources *Aviation Daily* (25 January 1985).
Graham & Kaplan (1982, 25).

1970-71 and 1974-75 to 5.1 per cent per annum between 1975-76 and 1979-80. A significant proportion of the accelerated growth was attributed to the relaxation of regulation and this was estimated to have provided cost savings of US\$4.9 billion for the period from 1976 to 1980. The average rate of productivity growth at local service airlines was found to be significantly higher than that at trunk carriers over the study period, although there was also significant variation within each group.

Impact of new entrants

The new entrants which have begun providing interstate services since the passage of the ADA often have lower operating costs than the incumbents. For example, Graham and Kaplan found that seven out of 10 new entrants which they examined had a cost advantage over the incumbents (Graham & Kaplan 1982, 105-110). The average costs of Southwest were more than 30 per cent below those of United and

Piedmont. There are a number of reasons for these cost advantages (Meyer & Oster 1984, 202-204).

As the new carriers are often non-union, they are able to use staff such as flight attendants in different areas and this flexibility has reportedly permitted reductions of up to 10 per cent in labour forces. The new entrants are also able to make greater use of part-time employees. They pay lower wages and, as employees are recently hired, premiums for seniority are lower. In addition, employees at the new carriers often work longer hours than those at the established airlines. These factors have enabled the new entrants to reduce labour costs by as much as 30 per cent.

The new entrants have also gained advantages through simplifying their operations. Concentration on short-haul networks with an emphasis on point-to-point operations has enabled them to achieve very high rates of daily aircraft utilisation which in some cases are three hours higher than those achieved by the established carriers. Simplified fare structures, often with only two fare levels on each route, have allowed the new carriers to avoid the complications and costs of capacity-controlled discounts and complex fares which are relatively expensive to administer. Further advantages have been obtained by separating items such as meals and baggage carriage out of inclusive fares and either not providing them or instituting separate charges. This unbundling of services has reportedly reduced the fares on some short-haul services operated by People Express by as much as 25 per cent.

The purchase of second-hand aircraft has also provided significant cost savings to the new entrants. The higher fuel consumption of the used aircraft is outweighed by the capital savings, with the cost per available seat mile of a used DC9-30 being about 20 per cent less than that of a new DC9-80 over routes of 500 miles.

The new entrants also use secondary airports in many of the major cities. The facilities include Newark (New York), Midway (Chicago) Long Beach (Los Angeles) and Oakland (San Francisco). This lowers operating costs as there are fewer congestion delays and terminal and gate fees are lower.

Competition and the threat of entry by new carriers have also encouraged the former trunk airlines to improve their operations. They have reduced their average costs by increasing the number of seats on their aircraft, reducing manning levels, revising route networks to increase utilisation and retiring inefficient aircraft

such as the B707 and B727-100. In addition, steps have been taken to increase employee productivity. For example, Braniff and Continental have both been relaunched as smaller non-union airlines with work practices and labour contracts similar to those of the new entrants.

It is important to note that the cost structures of some new entrants are equal to or higher than those of the established carriers. In addition, the activities of the new entrants and the older airlines are not directly comparable in some cases as they are operating in separate markets which have different cost structures. For example, an airline offering low-cost, no-frills service with high density seating for holiday travellers would generally be expected to have lower costs than a carrier providing full service facilities for businessmen requiring frequent flights with good connections. A direct comparison of the operating costs of the two airlines could therefore result in an incorrect estimate of their relative efficiency.

It seems likely that market forces will tend to eliminate the differences between the cost structures of the smaller new entrants and the large established carriers. This could involve an increase in the costs of the low cost carriers, a reduction in the costs of the high cost airlines or the elimination of the less competitive organisations. Factors which could increase the relative costs of the new entrants include increased seniority or unionisation of work forces, greater congestion at secondary airports and a rise in fuel prices which could make their more fuel-intensive aircraft less competitive.

LABOUR

Airline employees have been significantly affected by deregulation through its impact on employment levels, work practices and wages. These developments have contributed to reductions in operating costs.

Employment levels

Information on the number of employees at US airlines operating scheduled services is presented in Table 6.3. The data indicate that total employment increased as regulation was relaxed from 1976 and during the first two years after the passage of the ADA. It then fell by 8.8 per cent between 1980 and 1983 but recovered strongly in 1984, although at the end of the period it was still below the peak level achieved in 1980. These developments resulted in a 4.8 per cent increase in employment between 1978 and 1984.

TABLE 6.3 NUMBER OF EMPLOYEES AT US
SCHEDULED AIRLINES, 1974 TO 1984

<i>Year</i>	<i>Employees</i>
1974	307 318
1975	289 926
1976	303 006
1977	308 068
1978	329 303
1979	340 696
1980	360 517
1981	349 864
1982	330 495
1983	328 648
1984	345 079

Source Aviation Daily (21 June 1985).

The initial increase in employment after the passage of the ADA suggests that deregulation was not the cause of the decline in the total number of airline employees between 1980 and 1983. This is supported by the results of a simulation study which indicated that deregulation stimulated traffic and hence employment by facilitating promotional and discount fares as well as the entry of new carriers (Meyer 1985, 15). It was concluded that employment was almost certainly higher under deregulation than it would have been with continued regulation. The reduction in employment between 1980 and 1983 therefore appears to reflect the impact of other factors such as the economic recession.

Trends in employment have varied significantly at different airlines. Loss of market share and the need to restructure their operations caused the former trunk carriers to reduce their workforces by 13 per cent between 1979 and 1984. Table 6.4 shows that these carriers adopted a variety of strategies, with the largest decrease in employment occurring at Braniff where numbers fell by 88 per cent. Continental, Pan Am and TWA also implemented substantial workforce reductions. Northwest was the only former trunk airline to significantly increase employment over this period.

Although several of the former trunks have hired extra staff, the main source of employment growth in the US airline industry since 1978 has

TABLE 6.4 CHANGE IN NUMBER OF EMPLOYEES AT FORMER TRUNK AIRLINES,
1979 TO 1984

Airline	Employment		Change (per cent)
	1979	1984	
American	40 864	38 333	-6
Braniff	14 964	1 844	-88
Continental	12 035	9 040	-25
Delta	35 391	36 898	4
Eastern	38 655	39 514	2
Northwest	12 061	14 884	23
Pan Am ^a	35 577	28 217	-21
TWA	37 152	27 453	-26
United	52 947	45 019	-15
Western	11 256	10 460	-7
Total	290 902	251 662	-13

a. Includes National.

Source Air Transport Association (1980), *Aviation Daily* (21 June 1985).

been the new entrants and the former local service airlines. Establishment of new airlines and expansion of operations by existing carriers have provided opportunities for some of the staff previously employed by the larger airlines. For example, total employment at Republic, US Air and Piedmont rose by 12 625 or 55 per cent between 1979 and 1984 (Air Transport Association 1980, *Aviation Daily*, 21 June 1985).

Work practices and wages

The new entrants have had a major effect on work practices and salary levels in the US airline industry. As many of the newly formed carriers employ non-union labour, they have been able to avoid some of the restrictive practices that were prevalent in the industry during the period of detailed regulation.

The former trunk carriers have also attempted to change work practices in order to improve their competitive position. For example, under a new labour contract negotiated in late 1983 pilots at Northwest were required to fly up to 83 hours per month compared with 75 hours under the expired contract (Broughton & Jansonius 1984, 548).

The new entrants often pay lower wages than the established carriers. In 1983, the average annual wage at the majors and nationals was US\$42 000 compared with US\$22 000 paid by five of the new entrants (*Economist*, 25 August 1984). Similarly, pilots at TWA earned an average of US\$104 000 per annum compared to US\$30 000 for those at People Express.

Salary reductions have been implemented at some airlines such as Pan Am, Continental and Eastern in order to improve profitability, and some operators are paying new staff at lower rates than incumbent employees. For example, American is hiring new employees at wage rates 50 per cent below those of existing staff (*Economist*, 25 August 1984). Wages and productivity concessions have also been exchanged for ownership and representation on company boards. For example, in 1984 PSA offered its employees a package deal which included a 15 per cent reduction in compensation and a 15 per cent increase in productivity in exchange for 15 per cent stock ownership and a profit sharing programme equal to 15 per cent of pre-tax airline profits (*Aviation Week and Space Technology*, 12 November 1984, 191). Employees own 32 per cent of Western's common stock.

Despite these well-publicised developments, average employee compensation in the scheduled airline industry rose from US\$27 891 in 1978 to US\$42 505 in 1983 (Air Transport Association 1980, 1984). This involved a reduction of 0.4 per cent in real terms which was well below the rise of 13.7 per cent between 1973 and 1978. The proportion of total operating costs accounted for by labour fell from 42.4 per cent to 36.6 per cent over the five years to 1983.

PRICING

Deregulation has been accompanied by significant changes in airline pricing policies. Carriers have begun deviating from simple formula pricing, with the policies of the new entrants in particular differing markedly from those of the former trunk carriers.

Strategies

Several basic pricing strategies have emerged in the deregulated environment.

The new entrants have generally introduced unrestricted low fares at or below the levels of the prevailing discount fares, often with variations to reflect peak and off-peak conditions. In many cases their fares have been significantly below the levels that would have

resulted from the CAB's formula approach under detailed regulation. For example, in June 1981 the peak weekday fares charged by People Express were on average 47 per cent below the SIFL and the off-peak weekend fares were 66 per cent lower (Meyer & Oster 1984, 126). Similar strategies were adopted by other new entrants including Southwest (40 per cent and 58 per cent) and New York Air (25 per cent and 55 per cent). These fare reductions have reportedly stimulated substantial increases in traffic levels on some routes.¹

Although the low fare strategies adopted by many new entrants have received much publicity, this is not the only approach that has been used. A number of carriers have offered a high class of service with fares set at or slightly below the standard coach level.

The former trunk carriers have generally responded to low fares by offering restricted discounts in addition to their standard coach fares. These fares focus on discretionary passengers who are the most price-sensitive sector of the market. Advance purchase and minimum stay requirements are used to differentiate them from less price-sensitive groups such as business travellers. The number of seats available for discount fare passengers on a given flight is generally limited and the use of restricted discount fares has in some cases resulted in complicated fare structures. The established carriers have also begun to offer low unrestricted fares in some markets.

There have been a number of price wars on certain routes as a result of factors such as the offering of promotional fares by new entrants and the excess supply of wide-body equipment. For example, transcontinental fares fell as low as US\$99 between January and April 1983. A number of major airlines led by American subsequently moved to reintroduce a close relationship between fares and distance, specify basic fare groups and raise fare levels. This plan won support from all the major carriers and in the months after it was introduced 75 to 80 per cent of the fares on all routes conformed to the plan. However, the expansion of low-fare carriers later reduced its effectiveness (*Australian Financial Review*, 26 September 1984).

In early 1985, American again introduced a new fare structure which was widely matched by other carriers. It offered discounts of up to 70 per cent under highly restrictive conditions (Ott 1985, 213).

1. For example, the entry of People Express into the Buffalo-Newark/New York market and the response by US Air to its lower fares stimulated an 82 per cent increase in traffic on this route.

Eastern introduced a US\$98 transcontinental fare in March 1985 for overnight flights primarily operated for the carriage of freight.

Fare Levels

Deregulation has been accompanied by a reduction in the average level of fares in real terms. In the absence of comprehensive fare indices, trends in average yield provide a useful indicator of overall changes in fare levels.² The data in Table 6.5 indicate that real average yield initially fell after the relaxation of regulation, increased in 1980 and 1981 and then declined again. There was an overall fall of 6.3 per cent between 1978 and 1984.

It appears that deregulation has been a major factor in the decline in real average yield. The CAB's average cost-based approach to fare setting under detailed regulation would have permitted a 67 per cent

TABLE 6.5 AVERAGE PASSENGER YIELD ON US DOMESTIC SCHEDULED SERVICES, 1974 TO 1984
(cents per revenue passenger-mile)

Year	Average yield ^a	
	Nominal	Real ^b
1974	7.5	7.5
1975	7.7	7.1
1976	8.2	7.1
1977	8.6	7.0
1978	8.5	6.4
1979	9.0	6.1
1980	11.5	6.9
1981	13.1	7.1
1982	12.3	6.3
1983	12.1	6.0
1984	12.7	6.0

- a. Total passenger revenue divided by total revenue passenger miles.
b. Deflated using US consumer price index with 1974 = 100.

Sources *Aviation Daily* (4 August 1984, 21 June 1985).

2. However, caution must be exercised in interpreting trends in average yield as it can also be affected by factors such as substantial changes in patterns of air travel.

rise in nominal fares between 1978 and 1982 but in the deregulated environment the rise was only 48 per cent (*Aviation Week and Space Technology*, 6 June 1983). Average fares have therefore generally fallen as a proportion of the SIFL since deregulation, whereas previously they had followed the trend in the formula.³

The decline in real average fares has been associated with a substantial increase in the level and depth of discounting. The proportion of domestic revenue passenger-miles on the major airlines involving discount fares rose from 48 per cent in 1978 to 81 per cent in 1984.⁴ The average discount off the normal full fare increased from 34 per cent to 52 per cent over this period (Taneja 1985, 67). These changes have also been associated with an increase in the range of fares available in many markets.

Trends in average fare levels since deregulation have varied significantly in different markets. Table 6.6 provides data on trends in real yields in a sample of 24 054 markets which accounted for 75 to 80 per cent of total domestic scheduled traffic in 1982. It indicates that between 1978 and 1982 there were substantial decreases in real yields in the longer and denser markets, while shorter routes with low traffic levels exhibited increases in real yields.⁵

Table 6.7 shows the number of markets in each distance and traffic density classification. The greatest benefit of lower fares went to passengers travelling in high density long-haul markets (2.9 per cent of passengers), while the largest increase in fares was experienced in 13 759 markets with shorter hauls and lower densities (17.4 per cent of passengers). There was a reduction in real yield in only 5.1 per cent of markets, but the proportion was around 50 per cent in terms of passengers or passenger-miles due to the concentration of the reductions in denser and longer markets.

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3. These figures probably underestimate the beneficial effects of deregulation on fare levels. The regulatory changes appear to have encouraged a reduction in operating costs, and this would have limited the rise in the SIFL compared with the situation if detailed regulation had continued.
 4. The Air Transport Association classifies any fare below the standard coach fare as a discount.
 5. As noted earlier, fares on the shorter and less dense routes were held down during the period of detailed regulation by the use of a distance-based formula. This resulted in unprofitable operations. A more efficient fare-setting mechanism would therefore have been expected, *ceteris paribus*, to increase relative fares on these routes.

TABLE 6.6 CHANGE IN AVERAGE REAL YIELD OF US DOMESTIC AIR TRANSPORT SAMPLE BY MARKET GROUP^a, FOURTH QUARTER 1978 TO SECOND QUARTER 1982

(per cent)

Distance (miles)	Traffic density (passengers per day)					Total
	0-11	12-55	56-111	112-1111	1112 plus	
0-500	35.0	26.3	22.4	1.8	-13.4	2.2
500-1 000	31.2	23.2	18.1	7.9	-3.7	11.9
1 000-1 500	12.0	1.3	-3.5	-3.4	-10.4	-2.5
1 500-2 000	6.3	-3.2	-5.1	-4.6	10.0	-1.5
2 000-2 500	4.4	-9.0	-9.4	-15.3	-27.0	-15.8
2 500-3 000	-12.9	-17.2	-14.6	-17.8	-30.6	-21.3
3 000 plus	6.9	-2.0	0.2	-9.4	b	-5.3
Total	15.7	6.3	4.9	-4.4	-17.5	-1.3

a. Based on CAB origin and destination data for certificated airlines.

b. No market in this category

Source Public Works and Transportation Committee (1983, 576).

TABLE 6.7 US DOMESTIC AIR TRANSPORT SAMPLE BY MARKET SIZE^a, SECOND QUARTER 1982

(number of markets)

Distance (miles)	Traffic density (passengers per day)					Total
	0-11	12-55	56-111	112-1111	1112 plus	
0-500	4 192	530	151	255	25	5 153
500-1 000	7 863	703	140	247	8	8 961
1 000-1 500	4 572	391	72	118	6	5 159
1 500-2 000	2 267	197	41	57	3	2 565
2 000-2 500	1 177	125	27	41	2	1 372
2 500-3 000	409	42	15	16	3	485
3 000 plus	321	28	5	5	0	359
Total	20 801	2 016	451	739	47	24 054

a. Based on CAB origin and destination data for certificated airlines.

Source Public Works and Transportation Committee (1983, 576).

The trend in fares relative to the SIFL provides some information on the impact of deregulation on fare levels in different markets. By the second quarter of 1984, fares varied between 60 per cent and 140 per cent of the SIFL (Taneja 1985, 77). Average yield was higher than the formula level on short-haul and medium-haul routes and lower in long-haul markets. Low density markets had fares 20 per cent above the SIFL and fares in high density markets were very close to the formula level. These data suggest that travellers on high density and long-haul markets have been the major beneficiaries of lower fares in the deregulated environment.

Travellers in short-haul markets and small communities have reportedly not received similar benefits. However, the increases in fuel prices during 1979 and 1980 had a particularly strong impact on short-haul operations because these are more fuel intensive than long-haul operations. The relative costs of operating aircraft on short distance routes would therefore have increased in the absence of the regulatory changes. In addition, deregulation permitted the introduction of more suitable and more fuel-efficient aircraft onto many of these routes.

It is also important to note that a significant proportion of travellers on the short, least dense routes also use other air services where the fare developments have been more favourable. Approximately 70 per cent of passengers on commuter services connect to another flight and hence many of these travellers have probably not been disadvantaged as much as Table 6.6 would suggest. The ADA also included commuter carriers in the joint fare system for the first time, and this reportedly resulted in effective fare reductions of between one-third and one-half on many connecting commuter flights (Meyer & Oster 1984, 156-157). In addition, between 80 and 90 per cent of flights on commuter services are for business purposes and these travellers are probably the least sensitive to fare increases.

These developments suggest that the trend in fares for short-haul and low density services may have been more favourable than the changes reported in Table 6.6.

Determinants of fares

There has been a significant weakening of the close link between fare levels and route distance that was maintained by the CAB prior to the liberalisation of regulation (Civil Aviation Authority 1984, 9). Fares are now affected by a variety of cost and demand factors including the responsiveness of travellers to price changes, density,

the carriers operating on the route, quality of service and the time of travel.

One study concluded that fares were about 9 per cent lower in tourist markets than in non-tourist markets in 1981 and that they also tended to be higher where incomes were relatively high (Graham & Kaplan 1982, 203-4). Fares in markets served by newly certificated carriers were 20 per cent lower than those in similar markets where such carriers did not operate. Similarly, a later study found that fares were 10 per cent below the SIFL in markets with a high proportion of pleasure travel and 25 per cent above the formula level in non-pleasure markets (Taneja 1985, 77). Fares were 25 per cent below the SIFL in markets served by low-cost carriers and they were 15 per cent higher where no such carriers had entered.

It has been claimed that the trend in fares has been much less favourable on routes with no competitors or weak competition (Civil Aviation Authority 1984, 10). An analysis of data covering 92 per cent of the passenger trips reported to the CAB in the second quarter of 1981 indicated that fares in concentrated markets were higher than fares in relatively unconcentrated markets but that the differential was no more than 10 per cent (Graham & Kaplan 1982, 205). A later study also concluded that there was a significant negative relationship between numbers of carriers and fare levels in a sample of markets, but it was not possible to determine cost and profitability levels (Smith 1984).

Airlines have increased the availability of discounts for off-peak travel at different times of the day, week and year. These fares reflect the variations in airline costs associated with peak and off-peak periods. In addition, it is argued that the two-tiered pricing schemes involving capacity-controlled discounts alongside unrestricted full fares have many of the attributes of peak-load pricing⁶ (Graham & Kaplan 1982, 92).

The new fare structure which has accompanied deregulation has been criticised by some observers. It has been claimed that fares in the deregulated environment are not fair and reasonable and that there are now increased disparities in fares for comparable services, with

6. As the availability of seats is rationed, full fare passengers are assured a high probability of access to more popular flights while relatively more discount travellers take off-peak flights.

prices seldom being dictated by costs but rather being determined by cash flow and other needs of carriers (Public Works and Transportation Committee 1983, 575-590).

Other changes

Deregulation has been accompanied by a variety of other changes in carrier pricing policies. Connecting fares in markets receiving non-stop service have been reduced since passengers only prefer connecting flights when they are offered at a lower price than direct services. Carriers have also introduced frequent flyer programmes which provide bonuses to passengers who accumulate specified travel distances on a particular system.

PROFITABILITY

Prior to deregulation, the CAB attempted to support financially weak carriers. Airlines now face a more competitive market and less efficient carriers are more likely to contract or be driven out of business.

Financial performance

The overall financial record of the US airline industry prior to deregulation was poor. Between 1969 and 1976, the US scheduled airline industry earned a corporate rate of return of between 3 and 6 per cent which was only half that of other major non-financial industries. It was also well below the target rate of return considered by the CAB as adequate to maintain investment in the industry⁷ (Meyer et al. 1981, 87-88).

The data in Table 6.8 indicate that the rate of return increased steadily with the liberalisation of regulation between 1976 and 1978. The economy was growing strongly in 1978 when it reached 13 per cent which was comparable to rates of return earned in other industries. The rate of return then steadily declined to 2.7 per cent in 1982, but it subsequently recovered and reached 11.5 per cent in 1984.

Table 6.9 presents data on the operating profit and net profit of scheduled carriers over the 11 years to 1984. The losses incurred

7. The CAB set a fair rate of return of 10.5 per cent for large trunks, 12 per cent for small trunks and 9 per cent for local service airlines. A rate of 12 per cent was used for general fare level deliberations.

TABLE 6.8 RATE OF RETURN ON INVESTMENT BY US
SCHEDULED AIRLINES, 1974 TO 1984
(per cent)

<i>Year</i>	<i>Return^a</i>
1974	6.4
1975	2.5
1976	8.0
1977	10.9
1978	13.0
1979	7.0
1980	5.8
1981	5.3
1982	2.7
1983	5.9
1984	11.5

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

Source *Aviation Daily* (21 June 1985).

TABLE 6.9 PROFITABILITY OF US SCHEDULED AIRLINES, 1974 TO 1984

<i>Year</i>	<i>Operating profit^a</i>		<i>Net profit^b</i>	
	<i>US\$m</i>	<i>Per cent of operating revenue</i>	<i>US\$m</i>	<i>Per cent of operating revenue</i>
1974	726	4.9	322	2.2
1975	128	0.8	-84	-0.5
1976	722	4.1	563	3.2
1977	908	4.6	753	3.8
1978	1 365	6.0	1 197	5.2
1979	199	0.7	347	1.3
1980	-222	-0.7	17	0.1
1981	-455	-1.2	-301	-0.8
1982	-733	-2.0	-916	-2.5
1983	310	0.8	-188	-0.5
1984	2 152	4.9	825	1.9

a. Operating revenue minus operating cost.

b. Includes effects of taxes, interest and special items.

Source *Aviation Daily* (21 June 1985).

between 1980 and 1983 were substantial on an absolute basis but less significant when compared to annual revenues during this period. The industry earned relatively high profits in 1978 and again in 1984.

The period since the passage of the ADA has been associated with significant variation in the profitability of individual airlines. The losses incurred by the industry have mainly reflected unprofitable operations by the major airlines. They accounted for 82 per cent of total net losses and 85 per cent of domestic scheduled revenue passenger-miles in 1982.

Tables 6.10 and 6.11 present data on the earnings of the 11 majors between 1977 and 1984. The heavy losses were concentrated at several airlines with Pan Am, Eastern and Continental accounting for 38 per cent, 14 per cent and 14 per cent respectively of the losses incurred by unprofitable major airlines between 1979 and 1983. It is interesting to note that several major airlines were able to remain profitable or suffered only small losses during the recession.

TABLE 6.10 NET PROFITS OF MAJOR US AIRLINES^a, 1977 TO 1984
(US\$m)

Carrier	Year							
	1977	1978	1979	1980	1981	1982	1983	1984
American	71	134	87	-76	2	-20	228	209
Continental	26	49	-13	-21	-43	-61	-218	54
Delta	117	137	104	130	92	-17	-14	259
Eastern	28	67	58	-17	-66	-75	-184	-38
Northwest	93	62	72	7	10	5	50	56
Pan Am	45	119	76	80	-414	-485	-51	-207
Republic	b	b	b	b	-46	-40	-111	30
TWA	27	35	-27	-27	-28	-31	-12	30
United	95	284	-100	-15	-104	2	121	252
US Air	b	b	b	b	51	59	81	118
Western	13	55	42	-30	-73	-44	-55	-29

- a. Carriers with revenue exceeding US\$1 000 million. Domestic and overseas operations.
 b. Republic was formed by the merger of two local service airlines in 1979 and subsequently took over a third carrier. Republic and US Air were classified as local service airlines up to 1981.

Sources *Aviation Daily* (1 March 1979, 2 March 1981, 1 March 1983, 28 February 1984, 26 February 1985, 21 June 1985).

Information on the profitability of selected new entrants in 1983 and 1984 is presented in Table 6.12. The data indicate that there was significant variation in the profitability of these carriers, with several airlines such as Air One and Air Florida reporting relatively large losses. In contrast, Southwest was highly profitable in 1983 and 1984. People Express, which is one of the best-known new entrants, was not particularly profitable during this period.

Factors affecting performance

The profitability of the US airline industry since the passage of the ADA has reflected the impact of both general developments and factors specific to individual carriers.

General factors

Opponents of deregulation have claimed that the losses incurred by US airlines since 1978 are attributable to the changes in the regulatory environment. However, it appears that the overall decline in the industry's financial performance was mainly caused by the recession which reduced traffic and the fuel price increases that raised operating costs. The results of one simulation study indicated that

TABLE 6.11 NET PROFIT MARGINS^a OF MAJOR US AIRLINES, 1977 TO 1984
(per cent)

Carrier	Year							
	1977	1978	1979	1980	1981	1982	1983	1984
American	3	5	3	-2	0	0	5	4
Continental	4	6	-1	-2	-6	-4	-20	4
Delta	6	6	4	4	3	0	0	6
Eastern	1	3	2	-1	-2	-2	-5	-1
Northwest	9	8	6	0	1	0	2	2
Pan Am	2	5	3	2	-12	-13	-1	-6
Republic	b	b	b	b	-3	-3	-7	2
TWA	1	1	-1	-1	-1	-1	0	1
United	3	8	-3	0	-2	0	2	4
US Air	b	b	b	b	5	5	6	7
Western	2	7	4	-3	-7	-4	-5	-2

- a. Net profit as percentage of operating revenue.
- b. Republic and US Air were classified as local service airlines up to 1981.

Sources *Aviation Daily* (1 March 1979, 2 March 1981, 1 March 1983, 28 February 1984, 26 February 1985, 21 June 1985).

TABLE 6.12 PROFITABILITY OF SELECTED NEW ENTRANTS, 1983 AND 1984

Carrier	Net profit (US\$m)		Net profit margin ^a (per cent)	
	1983	1984	1983	1984
Former intrastate				
Air Cal	4	11	2	4
Air Florida	-51	b	-24	b
PSA	-13	-5	-3	-1
Southwest	41	50	9	9
Former charter				
Capitol	-29	na	-15	na
Transamerica	27	na	11	na
World	-29	-18	-12	-6
Former commuter				
Air Wisconsin	4	4	7	6
Empire	2	2	4	3
Newly formed				
Air One	-21	b	-250	b
America West	c	-15	c	-13
Jet America	8	-4	13	-4
Midway	-15	-22	-14	-15
Muse	-2	-17	-3	-17
New York Air	5	-7	3	-4
People Express	10	2	4	0

a. Net profit as percentage of operating revenue.

b. Not in operation, commenced 1 August 1983.

c. Commenced operations on 1 August 1983.

na not available

Sources Air Transport Association (1984). *Aviation Daily* (21 June 1985). Shifrin (1984, 1985b). Civil Aeronautics Board (1984a, 1984b).

the economic recession accounted for approximately one-half of the industry's net operating losses between 1980 and 1982. Similarly, losses during this period would have been reduced by 80 per cent if fuel prices had remained stable (Meyer 1985, 7-9). Higher interest rates also adversely affected airline profitability.

Deregulation may have assisted the industry by allowing carriers more flexibility in responding to the changes in the operating environment and withdrawing from unprofitable services. Increased discounting and

other fare innovations stimulated traffic although they also reduced real average yields.

The recovery in airline earnings in 1984 and 1985 provides further evidence to support the view that the economic situation has been a major factor in the decline in profitability. This follows the movement of the US economy into sustained recovery since 1983 and a reduction in fuel prices. Table 6.9 indicates that total operating profit in 1984 was at record levels, although net profit was lower than the 1978 figure due to higher interest payments. It is interesting to note that 10 to 12 airlines were expected to outperform typical industrial companies in some important measures such as return on equity in 1984 (*Aviation Week and Space Technology*, 28 January 1985).

Falling fuel, labour and interest costs together with continued economic growth are expected to underpin continued profitability by the industry in the near future. The 12 largest carriers reported a 26.9 per cent rise in net profit for the first six months of 1985 compared with the corresponding period in the previous year (*Aviation Daily*, 31 July 1985). A strike adversely affected United in early 1985 and, if this airline is excluded from the comparison, the increase in net profit for the remaining 11 major carriers was 195 per cent. An industry operating profit of US\$2.1 billion has been projected for 1985 (*Airline Executive* June 1985, 28).

Specific factors

The financial performance of some US airlines during the recent recession has been worse than that recorded during previous economic downturns. The former trunk airlines as a group incurred operating losses in only three years between 1945 and 1978, but were unprofitable in the first four years after the passage of the ADA. In contrast, the former local service airlines were profitable after 1978 but had incurred operating losses in 11 years during the period prior to deregulation (Graham & Kaplan 1982, Appendix A and B).

Quality of management has been a significant factor in the performance of individual airlines since deregulation. Under the regime of detailed regulation, variables such as pricing and route decisions were controlled by the CAB and competition was restricted to changes in frequency, capacity and on-board service. However, in the deregulated environment airline management has much greater scope to shape competitive strategies through its control over pricing and route networks. Some managers have performed well by restructuring their airlines' operations and moving their companies into profitable

niches. Other managers have made poor decisions. For example, Braniff undertook rapid but unprofitable expansion. Pan Am's acquisition of National in 1980 resulted in high wage and pension payments while yielding few useable routes and a fleet of unwanted aircraft. One simulation study suggests that operating income would have increased by approximately US\$1 034 million between 1980 and 1982 if the industry had better anticipated the declines in demand caused by the economic recession (Meyer 1985, 8-9).

There appears to be a learning curve associated with the response to deregulation. The ability of managers to operate in the more competitive environment has improved since 1978 as they have gained experience and the poorer managers have been forced out. The scope for any further movement up the learning curve in future is not clear.

Several other specific factors have also reduced the profitability of individual carriers. Some airlines which developed high cost structures during the period of detailed regulation did not adjust quickly to the deregulated environment and hence their competitive position was weakened. The excess supply of wide-body aircraft contributed to heavy competition on the longer, denser routes and many of the former trunk airlines were adversely affected by developments such as price wars in these markets. In addition, some airlines operated relatively large numbers of less fuel efficient aircraft such as the B707 when the industry was deregulated. These aircraft became less competitive when fuel prices increased.

The financial results of the US carriers have also included the impact of their overseas services. These operations accounted for 21 per cent of the revenue-passenger miles performed by the industry in 1983 but the importance varied at individual airlines (*Aviation Daily* 4 April 1984, Air Transport Association 1984). The only major carriers where the proportion exceeded 15 per cent in 1983 were Pan Am (79 per cent), Northwest (49 per cent) and TWA (41 per cent). These operations were affected by increased competition on overseas routes, the world recession and the strength of the US dollar which significantly reduced the value of earnings in overseas currencies.

Responses

The airlines incurring financial losses have adopted a number of strategies. In cases where the losses are not large or cash flow is still positive, management has concentrated on establishing a viable niche in the market. Borrowings have also been increased, with the

industry's long term debt rising from US\$4.3 billion to US\$9.1 billion between 1978 and 1984 (Air Transport Association 1980, *Aviation Daily* 21 June 1985). Other strategies have included wage reductions, productivity increases, sale of aircraft or routes, lease-back arrangements and establishment of low-cost non-union subsidiaries. A number of companies have sold non-airline assets such as hotels⁸ and in other cases tax benefits have been traded.

Between 1978 and 1985, 28 airlines operating scheduled services declared bankruptcy (Ott 1985, 214). Many of these airlines subsequently either returned to operation after restructuring, merged with other carriers or were taken over. Some carriers such as Braniff and Continental have filed for protection under Chapter 11 of the US Bankruptcy Code in order to re-organise as smaller, low-cost airlines. In the case of Continental, this involved a reduction of two-thirds in the labour force and a halving of pay scales. Other carriers which have declared Chapter 11 bankruptcy include Air One, Air Florida, Capitol and Emerald.

Substantial variations in the profitability of individual airlines are an inherent component of a dynamic and competitive market which is responsive to consumer demands. Provided that freedom of entry is maintained, it is quite a normal industry situation for certain organisations to incur losses and possibly be forced out of the industry. In the long run, the airlines that survive will be those which are efficient and develop profitable niches in response to travellers' expressed requirements.

8. For example, Pan Am sold US\$516 million in real estate.

CHAPTER 7 SERVICE EFFECTS OF DEREGULATION

The service effects of deregulation include service quality, operations to small communities and safety.

SERVICE QUALITY

The quality of service received by US air travellers has been affected by the changes in aircraft facilities and scheduling that have accompanied deregulation.

It appears that service levels and the comfort of passengers have been reduced in many cases. The level of crowding has risen as a result of higher seating densities and increases in load factors. The higher load factors have reduced the probability of getting a seat on a particular flight, and increased congestion at airports has affected travel times and the reliability of service in some cases. A reduction in airline spending on passenger services of 6 per cent per passenger and 11 per cent per revenue passenger-mile in real terms between 1978 and 1984 also suggests that service amenities have declined (Air Transport Association 1980, *Aviation Daily*, 21 June 1985).

Changes in the type of aircraft used on some routes may also have adversely affected some consumers. The small aircraft operated by the commuter airlines are often less comfortable than the jet aircraft used by the larger carriers, and hence the increased role of commuter operators in services to small communities may have had some adverse quality of service aspects.

Where matched by lower fares, these changes have resulted in the provision of new price-service combinations which may more closely match the preferences of many passengers. This has probably been beneficial to holiday travellers. Businessmen have suffered many of the same reductions in service quality (for example, crowding and lower availability of last minute reservations) although in many cases they have not received compensating reductions in fares due to restrictions on the availability of discounts (Moore 1984, 28).

However, discount fares have been widely available on many new entrant airlines which operate simplified fare structures. In addition, some airlines have created new and higher quality business class services and several carriers specialising in high quality service have been established.

Table 7.1 shows that there have been significant changes in schedules. The overall number of aircraft departures fell and seats available increased between 1978 and 1983, but the trend varied significantly between flight segments. Aircraft departures increased on services between the larger airports. They decreased in all other categories, the largest declines occurring on direct services between the smallest airports. Seats available increased on routes between the larger airports and between some smaller airports and nearby hubs. The largest falls involved services between the smaller airports. These developments have resulted in substantial increases in capacity on routes with between 2000 and 2500 or over 3000

TABLE 7.1 CHANGES IN CAPACITY BETWEEN MAJOR CATEGORIES OF AIRPORTS, 1978 TO 1983

(per cent)

<i>Airport categories</i>	<i>Change in departures^a</i>	<i>Change in available seats^a</i>
Between large hubs and Large hubs	13	22
Between medium hubs and Large hubs	14	28
Medium hubs	2	14
Between small hubs and Large hubs	-5	5
Medium hubs	-11	4
Small hubs	-39	-26
Between non-hubs and Large hubs	-27	-11
Medium hubs	-3	14
Small hubs	-54	-44
Non-hubs	-51	-43
All segments	-2	13

a. Non-stop flights only.

Source Taneja (1985, 23)

passengers per day and substantial decreases in markets with less than 200 passengers per day (Taneja 1985, 22). They reflect the increased reliance on hub-and-spoke networks and a decline in direct services between small communities.

Some work on the convenience of air service has been undertaken by Graham and Kaplan who developed an index of service convenience reflecting the correspondence between flights and desired travel times as well as actual time taken to make a trip. Their results for a sample of 210 markets indicated that on average travellers experienced a slight increase in convenience between 1978 and 1982, although there was a great variation across cities. There was a slight increase at hubs, a slight decline at non-hubs and an improvement in communities where trunks and local service airlines had suspended operations. It was concluded that carriers had realigned their routes to better match traffic flows (Graham & Kaplan 1982, 153-164).

Increased hubbing has led to an improvement in on-line services for passengers. The proportion of passengers that used only one aircraft on their trip increased slightly from 72.7 per cent to 73.3 per cent between 1978 and 1981, but where a change of aircraft was involved there was a 40 per cent decline in the proportion of trips that required a change of carrier as well (Graham & Kaplan 1982, 58).

SMALL COMMUNITY SERVICE

Deregulation has been accompanied by significant changes in the nature and structure of services to small communities. There has been considerable debate on the extent to which the regulatory changes have contributed to these developments.

Withdrawal of certificated carriers

As noted earlier, the reduction in trunk and local service airline operations to small communities was a well-established trend prior to deregulation. The pattern of withdrawal by the larger carriers continued after the passage of the ADA, with major and national airlines terminating service to 130 communities covered by the EASP between 1978 and 1982 (Public Works and Transportation Committee 1984, 307).

The withdrawal of certificated airlines from small communities was probably accelerated by deregulation as it made exit easier for these carriers and provided increased opportunities for them to enter larger, more attractive markets. However, cessation of service was

inevitable in many cases as the jet aircraft operated by the certificated airlines were unsuitable for short and lightly trafficked routes (Graham & Kaplan 1982, 137-139). The relatively high operating costs of these aircraft were further increased by the large increases in fuel prices after 1978.

The certificated carriers have been replaced by commuter airlines whose aircraft are often better suited to small community services.¹ The major role played by commuter airlines in small community service is evident from Table 7.2. In 1982 these carriers provided the only air service at 67 per cent of EASP communities and served a further 26 per cent of these communities in conjunction with certificated carriers.

Commuter airlines grew rapidly after 1978. They had a 43 per cent increase in enplanements and a 75 per cent increase in revenue-passenger miles between 1978 and 1981 (Bailey 1983, 10). By 1983 the commuters provided service at 854 airports and accounted for 6 per cent of domestic enplanements. The nature of their operations has

TABLE 7.2 OPERATIONS TO EASP ELIGIBLE COMMUNITIES BY CARRIER TYPE, 1978 AND 1982

<i>Points/carrier type</i>	<i>Number of points</i>		<i>Percentage change</i>
	<i>1978</i>	<i>1982</i>	
Points eligible	320	327	2
Points served by			
Regionals or commuters exclusively	83	220	165
Majors or nationals exclusively	133	23	-83
Jointly served	104	84	-19
Total EAS points served by			
Regionals or commuters	187	304	63
Majors or nationals	237	107	-55

Source Public Works and Transportation Committee (1983, 70).

1. Commuters are reportedly the lowest cost operators in any market with fewer than 100 enplanements per day, and on very short hauls (for example 150 miles) have a cost advantage up to 130 enplanements per day.

also evolved in the deregulated framework as they have entered longer and denser routes and acquired larger aircraft. The number of commuter airlines has declined since 1981. The Federal Aviation Administration has forecast that commuters will account for 9.3 per cent of domestic passenger enplanements by 1996 (*Aviation Week and Space Technology*, 25 February 1985).

Service patterns

The CAB has implemented the EASP using five criteria (Meyer & Oster 1984, 188-189). The minimum standard of equipment is twin-engined, dual piloted aircraft with unimpeded cabin entry. The Board attempts to ensure that small communities are linked to hub airports where opportunities to connect to other flights are available. Frequencies involve the minimum weekday service set down by Congress together with the same on weekends and departure times are required to be reasonably convenient. The maximum number of seats guaranteed to a community is 160 per weekday in both directions. A maximum of two stops between the community receiving essential air service and its designated hub is generally specified.

The EASP has been successful in maintaining air services to eligible communities. In the five years after the passage of the ADA, none of the communities that were guaranteed service lost all connections to the national airline system. In contrast, 102 of the 203 points that were not included in the scheme lost all of their air service over this period (Public Works and Transportation Committee 1984, 27). The latter communities were served exclusively by commuter airlines in 1978 and hence were not guaranteed air service.

Deregulation has been accompanied by a decline in the quality of air service received by many small communities. CAB data show that 206 of the 390 non-hubs which received air service in both 1978 and 1983 had decreases in departures over this period (Nammack 1983, 22). Of the 184 non-hubs that gained departures, there was usually a decrease in the number of seats available. A total of 306 points had decreases in departures or seats or both over the five-year period. Non-hubs recorded a 7.6 per cent increase in weekly aircraft departures and a 9.8 per cent decline in the number of seats available between March 1978 and March 1984 (Taneja 1985, 84).

A study by the General Accounting Office released in May 1983 concluded that the EASP was not the cause of the decline in service at small communities (Nammack 1983, 22). Factors responsible were cited as the economic recession, the availability of better schedules and

lower fares at neighbouring hubs and unreliable service provided by certain carriers prior to withdrawal from smaller communities.

Further support for this view is provided by the activities of commuter airlines which were not subject to detailed regulation before 1978. Over the five years to 1983, there was a 25.4 per cent reduction in flights and a 33.4 per cent fall in seating capacity from non-hub airports served exclusively by one or more commuter airlines (Jones & Cocke 1983, 695).

The change in departures from small communities since deregulation has varied on different routes. Table 7.3 shows that non-hubs which lost service from certificated carriers between 1978 and 1981 received more departures when commuter airlines commenced operations. Points which retained trunk or local service airline operations lost direct services to other small communities but had more departures to larger airports.

Although Table 7.3 indicates that the number of departures from non-hubs fell in overall terms between 1978 and 1981, the decline was concentrated on services to other small airports. The increased services to medium hubs have provided better access to other points (including small communities) connected to the hubs (Graham, Kaplan & Sibley 1983, 120). The impact of a decline in departures has also

TABLE 7.3 CHANGE IN WEEKLY DEPARTURES AT NON-HUBS BY DESTINATION TYPE, 1978 TO 1981

(per cent)

Non-hub category	Destination		Total
	Large/medium hubs	Small hubs/non-hubs	
Points losing trunk or local service (74)	37	16	26
Points retaining trunk or local service (156)	22	-16	0
Points not served by trunk or local service in 1978 or 1981 (306)	-5	-19	-12
Total	11	-13	-2

Source Graham & Kaplan (1982, 151).

been minimised in some cases by the availability of good or improved service at a nearby airport (Moore 1984, 21) or close substitutes for air travel such as motor cars (particularly on routes under 50 miles). In addition, the flights lost have tended to involve circuitous routes with many stops, and their replacement by a smaller number of direct flights to major hubs may have resulted in better services (Meyer et al. 1981).

It is also important to emphasise that some of the declines in departures indicated in Table 7.3 occurred during a recession and that more favourable trends could emerge as a result of economic recovery. For example, the downward trend in commuter services to non-hubs was reversed in 1982-83 when flights and seating capacity rose by 3 per cent and 10 per cent respectively (Jones & Cocke 1983, 694-696).

The increased importance of commuter operators on routes to small communities has involved some other problems. The turbo-prop aircraft which they operate are reportedly less acceptable to consumers than the jets which previously provided services on these routes (Taneja 1985, 85). In addition, commuter operators are more volatile and there have been complaints about the reliability and consistency of services.

The discussion of fares in Chapter 6 indicated that the less favourable developments had occurred on the short and least dense routes, although there were a number of offsetting factors. Local service operators were traditionally permitted to charge up to 130 per cent of the SIFL, and most commuter fares were between 100 and 130 per cent of the formula level in 1980 (Meyer & Oster 1984, 153). In a sample of markets where local service carriers were replaced, two-thirds of the replacement commuter operators charged the same fare as the departing carrier and only 25 per cent had higher charges. The average premium in the latter case was 15 per cent.

Subsidy payments

The data in Table 7.4 demonstrate that the EASP has been associated with a significant reduction in the overall cost of air service subsidies for small communities. There are several reasons for this development.

The new Section 419 subsidy scheme is more cost-effective than the old Section 406 programme, with the average costs per city under each scheme being US\$267 000 and US\$718 000 respectively in 1982 (Graham & Kaplan 1982, 145). The subsidies to local service airlines were

based on each carrier's entire system need, while loan guarantees facilitated the acquisition of larger aircraft which were unsuited to short-haul, low density services. By comparison, the Section 419 scheme bases the subsidy on the specific costs incurred in providing unprofitable service to a particular community, and the subsidy can be paid to commuter airlines which often have the most suitable aircraft. The improvement in the US economy since 1983 has also contributed to reductions in subsidy payments.

The number of communities in the lower 48 States receiving subsidy fell from 202 in 1978 to 105 in early 1985. There were also 37 subsidised points in Alaska in 1985 (*Aviation Week and Space Technology*, 4 February 1985).

There may be further significant changes to small community services in the longer term if the plan to terminate the Section 419 subsidy programme is adhered to and alternative measures are not implemented. The programme was originally scheduled to cease in 1988 but there have been moves to bring this forward (*Aviation Week and Space Technology*, 4 February 1985). Funding is currently provided up to the end of 1986.

TABLE 7.4 SMALL COMMUNITY SERVICE SUBSIDY OUTLAYS, 1976 TO 1985
(US\$million)

Year	Section 406	Section 419	Total
1976	71.3	a	71.3
1977	79.8	a	79.8
1978	74.0	a	74.0
1979	72.7	0.4	73.1
1980	80.9	9.4	90.3
1981	94.4	13.8	108.2
1982	45.6	18.7	64.3
1983	13.5	39.8	53.3
1984	a	35.0 ^b	35.0 ^b
1985	a	42.0 ^c	42.0 ^c

a. Subsidy not provided.

b. Budget for 1984. Actual expenditure was below this figure.

c. Estimated expenditure to 1 October 1985 of US\$52 million authorisation.

Sources Civil Aviation Authority (1984, 15). *Aviation Week and Space Technology* (4 February 1985).

SAFETY

The ADA identified safety as the highest priority in air commerce and specified that there should be no deterioration in established safety procedures. It directed the Secretary of Transportation to prepare an annual assessment of the effect of the Act on the level of air safety as well as recommendations for any corrective measures.

Deregulation does not appear to have resulted in a significant fall in overall safety standards (Leonard 1983, 458). Table 7.5 shows that there was no upward trend in the fatal accident rate on scheduled services after deregulation. Preliminary figures released by the National Transportation Safety Board indicate that in 1984 US airlines achieved their lowest total accident rate and the second lowest fatal accident rate since the recording of data commenced in the US (*Aviation Week and Space Technology*, 25 February 1985). Studies by the Secretary of Transportation concluded that there was no evidence that deregulation had adversely affected air safety in 1979, 1980 and 1981 (Public Works and Transportation Committee 1983, 249).

International comparisons also indicate that US airlines have a relatively good safety record (Ramsden 1985, 30). Between 1973 and

TABLE 7.5 ACCIDENT RATE ON SCHEDULED SERVICES OF US CARRIERS, 1974 TO 1984

<i>Year</i>	<i>Fatal accidents</i>	<i>Fatal accidents per 100 000 departures</i>
1974	7	0.127
1975	2	0.043
1976	2	0.041
1977	3	0.061
1978	5	0.100
1979	4	0.074
1980	0	0.000
1981	4	0.077
1982	3	0.060
1983	4	0.080
1984 ^p	1	0.019

p. Preliminary.

Source *Aviation Daily* (30 July 1984, 21 June 1985).

1984 they had 36.6 fatalities per million flights which was the seventh best performance among major aviation nations. The relative safety record of the US carriers is adversely affected by factors such as poor weather conditions and high traffic density, and hence their relative performance may be better than indicated by the available data.

Developments in the air traffic control system may have had some effect on safety standards in the US, but there is no conclusive evidence on the overall impact. Some observers have claimed that wider safety margins imposed after the PATCO strike may have been responsible for the favourable trend in safety standards after deregulation. However, it has also been alleged that the reduction in the number of experienced air traffic controllers in the aftermath of the strike may have adversely affected safety. For example, Delta has filed suit against the FAA in relation to air traffic control procedures which allegedly contributed to the crash of a Delta aircraft in August 1985 with the loss of 133 lives.

Some critics of deregulation have claimed that the increased role of commuter airlines in services to small communities may have lowered safety standards on these routes. The best available data indicate that the overall accident rate on commuter airlines is approximately three times the rate on the larger carriers. However, the record of the 20 largest commuters, which account for over 50 per cent of enplanements, is almost as good as that of the certificated carriers. Tighter safety regulations introduced by the FAA are also expected to improve commuter performance (Meyer 1985, 21). When differences in the number of intermediate stops on jet and commuter services are taken into account, the safety standards of the small operators may be as good as those of the jet operators (Meyer & Oster 1984, 90-95).

It is also important to consider safety from the viewpoint of the total transport sector. If the changes in the US airline industry resulting from deregulation have caused some diversion of traffic from less safe modes, overall safety for travellers would have increased.

CHAPTER 8 CONCLUDING REMARKS

The regulatory framework for airline operations enforced in the US from 1938 reflected the CAB's primary aim of maintaining stability in the US airline industry. Entry and fares were strictly controlled. Airline cost structures were raised by factors such as the protection of high-cost carriers, reliance on service competition, restrictions on off-peak fares and the appropriation of productivity increases by labour. Support was provided for operations to small communities but this did not prevent a fall in the quality of service and the number of communities receiving service. The trunk airlines had a dominant position in the industry and various restrictions were placed on all other operators.

The process of deregulation commenced in 1976 when the CAB liberalised its regulations on charters, pricing and route entry and exit by scheduled carriers. The passage of the Airline Deregulation Act in 1978 resulted in a phased deregulation of the US air passenger industry. Economic controls over entry, exit, routes and fares were generally removed, although there was continued regulation in some areas such as the maintenance of services to small communities. The CAB was abolished at the end of 1984 when its remaining functions were transferred to the Department of Transportation.

Deregulation has been accompanied by a variety of changes in the US airline industry. However, the identification of the extent to which these developments are attributable to deregulation is complicated by several other changes over this period. In particular, the deterioration in economic conditions and the substantial increase in fuel prices after 1978 had major effects on the industry. It is also important to note that recent trends in the industry may not necessarily continue.

The removal of economic controls over entry has permitted many new carriers to commence scheduled interstate operations with large aircraft. A number of unprofitable carriers have been forced out of the industry but the total number of certificated airlines has risen substantially since 1978.

The overall market share of the former trunk airlines has fallen as they have restructured their operations to meet the new regulatory environment. The former local service airlines and many of the new entrants have expanded their route networks. Hub-and-spoke operations have become more important. Deregulation may have contributed to the increase in congestion at a number of major airports, but this problem is likely to be reduced in the long run as remedial measures are implemented.

The level of traffic carried by US airlines over the period since 1978 has been affected by deregulation and a number of other factors such as changes in economic conditions. The changes in industry structure and fare levels associated with deregulation appear to have stimulated airline traffic.

The regulatory changes have facilitated an overall increase in the level of competition between airlines by providing greater freedom for carriers to enter or exit markets and by allowing them to include pricing in their competitive strategies. These developments may have affected the distribution of traffic between air transport and other modes. The deregulation of the ticket distribution network and attempts to end alleged bias in the computerised reservations network have also promoted competition.

Unit costs of US airlines fell in real terms between 1978 and 1984 despite higher fuel costs and interest charges. This reflected a number of developments including higher load factors, improved aircraft utilisation, increased seating densities, changes in labour practices and the establishment of low-cost new entrants. Deregulation appears to have been a significant factor in these developments.

Employment in the airline industry increased between 1978 and 1984 although there was a reduction from 1980 to 1983. The former trunk airlines have generally reduced their workforces but this has been offset by increases at other carriers. The more competitive environment created by deregulation has stimulated wage reductions and changes in work practices.

Overall fare levels have fallen in real terms since 1978, partly as a result of a substantial increase in the level and depth of discounting. However, there has been significant variation in the trend between markets, with the major benefits of lower fares being received by travellers on the longer and denser routes. A comparison of fares with the SIFL suggests that deregulation has been a major

factor in these developments. There has also been a significant weakening of the previously close link between fare levels and distance, and fares are now affected by a variety of cost and demand factors.

The profitability of the US airline industry initially fell after the passage of the ADA but it subsequently recovered to reach almost record levels in 1984. The period of poor profitability appears to have been mainly due to the impact of adverse economic conditions and the increases in fuel prices, although deregulation has also contributed to the poor performance of individual carriers.

Overall quality of service has probably fallen in the deregulated environment. However, in many cases this has been accompanied by lower fares and the provision of new price-quality combinations. Business travellers appear to have received less benefits from these changes than holiday travellers.

Larger carriers have continued to withdraw from services to small communities since the passage of the ADA and commuter airlines have expanded rapidly in these markets. The EASP has been successful in maintaining air services to eligible communities. The decline in some aspects of the quality of air services received by small communities is reportedly due to factors other than deregulation. Subsidy payments have fallen as a result of a more efficient subsidy scheme and the use of more appropriate aircraft.

The available data indicate that deregulation has not resulted in significantly lower safety standards in the US air transport industry.

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ABBREVIATIONS

ADA	Airline Deregulation Act
ATA	Air Transport Association
CAA	Civil Aeronautics Authority
CAB	Civil Aeronautics Board
EASP	Essential Air Services Programme
FAA	Federal Aviation Administration
GDP	Gross Domestic Product
PATCO	Professional Air Traffic Controller's Organisation
SIFL	Standard Industry Fare Level



Bureau of Transport Economics

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EXTENDED SUMMARY - BTE INFORMATION PAPER 16

DEREGULATION OF THE DOMESTIC AIRLINE INDUSTRY IN THE UNITED STATES

Deregulation of the domestic airline industry in the United States has led to significant changes according to a Paper released by the Federal Bureau of Transport Economics today. Information Paper 16 was prepared in the course of developing the Bureau's submission to the Independent Review of Economic Regulation of Domestic Aviation. The Paper summarises the information available on the results of deregulation of the US domestic aviation industry, the world's largest single air passenger market.

The process of airline deregulation commenced in 1976 with a more liberal interpretation of regulation within the existing legislative framework. The passage of the Airline Deregulation Act (ADA) in 1978 provided the legal framework for a phased deregulation of the US domestic air passenger industry. Assessment of the resulting changes in the industry is complicated by the effect of other factors such as changes in economic conditions.

Overall fare levels (as measured by average revenue per passenger mile) fell by around 6 per cent in real terms between 1978 and 1984, partly as a result of a substantial increase in the level and depth of discounting. However, there have been significant differences between markets, with travellers on the longer and denser routes receiving the greatest benefits. A comparison of recent fares with the Standard Industry Fare Level (the basis of pricing under the previous detailed regulatory regime) suggests that deregulation has been a major factor in these developments.

The profitability of the US airline industry initially fell after the passage of the ADA. However, it subsequently recovered to high levels in 1984 when the US scheduled airline industry earned net profits of more than US\$800 million. The period of poor profitability appears to have been mainly due to the impact of adverse economic conditions and increases in fuel prices. Deregulation also contributed to the poor performance of those individual carriers which did not adjust well to the new operating environment.

The available data (up to the end of 1984) indicate that deregulation has not resulted in significantly lower safety standards in the US air transport industry. There was no upward trend in the fatal accident rate on scheduled services after deregulation and in 1984 US airlines achieved their second lowest fatal accident rate since the recording of data commenced in the US.

Average operating costs of US airlines fell by almost 10 per cent in real terms between 1978 and 1984 despite higher fuel costs. This reflected developments such as higher load factors, improved aircraft utilisation, increased seating densities, changes in labour practices and the establishment of low-cost new entrants. Deregulation appears to have been significant in these developments.

Employment in the airline industry increased by almost 5 per cent between 1978 and 1984 although there was a fall between 1980 and 1983. The former trunk airlines have generally reduced their workforces but this has been offset by increases for other carriers. The more competitive environment created by deregulation has stimulated changes in work practices and wage levels.

The level of traffic carried by US airlines over the period since 1978 has been affected by a number of factors including deregulation and changes in economic conditions. The changes in industry structure and fare levels associated with deregulation appear to have stimulated airline traffic.

Larger carriers have continued to withdraw services to small communities since the passage of the ADA and commuter airlines have expanded rapidly in these markets. The Essential Air Services Programme provision of the ADA, which guaranteed continuation of essential air transportation to a number of communities (effectively those previously served by larger airlines) has been successful. Subsidy payments have fallen as a result of a more efficient subsidy scheme and the use of more appropriate aircraft types.

The available evidence suggests that the overall quality of on-board service has fallen in the deregulated environment. However, in many cases this has been accompanied by lower fares and the provision of new price-quality combinations. Business travellers appear to have received less benefits from these changes than non-business travellers.

The regulatory changes have led to an increase in the level of competition between airlines by providing greater freedom for carriers to enter or exit markets and by allowing them to include pricing in their competitive strategies. These developments may have affected the distribution of traffic between air transport and other modes.

The removal of economic controls over entry has permitted many new carriers to commence scheduled interstate operations with large aircraft. A number of unprofitable carriers have been forced out of the industry but the total number of certificated airlines rose substantially between 1978 and 1984. The new entrants have included former intrastate airlines, former commuter carriers, newly formed airlines and former charter operators.

The overall market share of the former trunk airlines has fallen as they have restructured their operations to meet the new regulatory environment. The

former local service airlines (which previously served regional markets on interstate routes) and many of the new entrants have expanded their route networks. Hub-and-spoke operations have become more important and the integrated national network has continued, although it has reportedly been weakened. Deregulation may have contributed to increases in congestion at a number of major airports.

The identification of the extent to which the developments described in the report are attributable to deregulation is complicated by several other changes over the period. In particular, the deterioration in economic conditions and the substantial increase in fuel prices after 1978 had major effects on the industry. The Paper also notes that recent trends in the industry may not necessarily continue, given the dynamic nature of the industry under deregulation.

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