



The U.S. Airline Industry, 1978-1988 (A)

Introduction

When the government deregulated the U.S. airlines in 1978, after 40 years of regulatory protection, a new industry was in the air. This case and its corresponding (B) case (HBS No. 390-026) describe the industry under regulatory control and outline the forces that prompted the 1978 decision. The cases also track the evolution of the industry and the performance of the U.S. competitors during the first decade of deregulation.

The Regulated Industry

America's enthusiasm for air travel was heightened after Charles Lindbergh made his solo transatlantic flight in 1925. Although the nation had a rudimentary infrastructure and a short supply of aircraft at that time, two government acts helped establish the industry. The 1925 Kelly Airmail Act gave private airlines their first reliable source of income. Through a system of subsidies and competitive bidding, the act opened up greater possibilities for passenger travel by allowing carriers to deliver mail. In 1926, the Air Commerce Act outlined criteria for pilot and aircraft certification. Under this government-made framework, supply and demand grew phenomenally. The number of passengers flown per year grew from 6,000 to 400,000 and dozens of carriers started up mail and passenger service. Entry was easy—all it took was an airplane, a pilot, a ticket office, and a competitive airmail bid. These policies, however, left the nation's route pattern unorganized and inhibited progress toward a rational system.

Offering a solution for a more practical infrastructure, Postmaster General Walter Brown proposed that he control the system's development by awarding contracts at his discretion. Through the McNary-Waters Act of 1930, Congress eventually did give the postmaster power over the industry (McNary-Waters Act, 1930), but mandated that he continue to run it on the competitive bidding basis. Nonetheless, Brown staged a bid-rigging and market-dividing meeting where the airlines negotiated among themselves for the territories in which each would have paramount interest. The outcome was the development of three primary east-west tracks across the United States exclusively controlled by three airlines—United along the northern tier, TWA through the middle, and American in the south.

Research Associate Nancy Donohue and Professor Pankaj Ghemawat prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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Under Brown's tenure, United, American, and TWA dominated the industry. They grew rapidly in the early 1930s by establishing holding companies and swallowing smaller airlines, and they locked in their smaller counterparts through the appointment of shared directors. Except for Delta, all the major carriers operating in 1988 were embedded in this structure. President Roosevelt halted this pattern of growth in 1934 after a Hearst newsman uncovered that the postmaster had extended subsidy payments far above contractual rates to American, United, and TWA. Roosevelt canceled all contracts and ordered the Army to take over mail delivery. However, within weeks, the pilot corps flying aging aircraft suffered a rash of deaths and injuries, forcing Roosevelt to reissue emergency contracts to private airlines under the 1934 Airmail Act. This act curtailed the postmaster's authority and reimposed strict competitive bidding. Because former carriers were prohibited from participating in the new round of bidding, American, United, and TWA spun off the small airlines from their holding companies and reincorporated under new executive officers. Although the three carriers retained most of their former routes, their bids were challenged by new carriers such as Delta and Continental. As new airlines attempted to build market share, they bid low on all new route contracts and no carrier made money in the following years.

The ensuing instability led to a congressional inquiry which concluded that many airlines would fail unless legislation was enacted to protect the industry from cutthroat competition. In this New Deal era, a consensus quickly called for a comprehensive plan of regulation in the industry, similar to the one already developed for telecommunications. Consequently, Congress passed the Civil Aeronautics Act in 1938.

The act granted the Civil Aeronautics Board (CAB) authority to structure the airline industry through regulation of passenger fares and airmail rates, route entry and exit, mergers and acquisitions, and interfirm agreements. The CAB doled out a balance of lucrative high-density, long-haul routes with unprofitable lightly traveled ones to each airline. Typically, two or three carriers provided service in a given market, although in many instances some routes were covered by only one carrier. The CAB precluded price competition by setting standard fare levels and it managed the fares to ensure cross-subsidization between profitable and unprofitable markets. Cost increases were passed along to customers, and the CAB allowed the airlines to earn a reasonable rate of return.

Overall, the board's policies froze the industry in its 1938 configuration. For the next 40 years not a single new carrier joined the 16 established trunks. By 1978, the number of trunk carriers had shrunk to nine through mergers and acquisitions. The CAB did, however, encourage local service carriers to enter the industry in the 1940s and 1950s. The board designed these locals to complement the trunks and awarded each a regionally centered route system that fed the trunks with additional passengers. The locals' penetration was minimal, however, reducing the market share of the 4 largest trunks (United, American, TWA, Eastern) from 80% to 70%.

With suppressed route and price competition, the airlines focused their marketing ploys on service items such as meals and movies and challenged one another rigorously in this area. By the mid-1950s, additional competition in the form of plane capacity evolved. Travelers were greatly impressed by the latest in speed and comfort, and the invention of the jet prompted all the trunks to replace their propeller aircraft during the 1950s and 1960s. This move greatly increased the trunks' capacity levels and allowed them to schedule more frequent flight times. Under a phenomenon known as the S-curve effect, the airlines that added capacity gained a disproportionate share of market traffic because customers were most likely to call the airline with the widest range of travel options. The purchase of new aircraft left the trunks with weakened earnings and balance sheets, while the S-curve dilemma intensified rivalry in the high-density markets where business travelers sought maximum convenience. Overall, the excess capacity elevated the trunks' unit costs.

Macroeconomic influences further complicated the predicament. Costs rose sharply for fuel (20%-30% of operating expenses) with the first oil shock of 1973-1974. As stagflation set in, inflation boosted labor costs (45% of operating expenses), and the stagnation of GNP growth curtailed demand. In the face of this crisis, the trunks petitioned the CAB to take action that would ensure their

survival. In response, the CAB declared a route moratorium and allowed carriers to cooperatively reduce capacity in high-density markets. However, these moves did little to address the industry's underlying structural problems. By the 1970s, regulatory failure was imminent.¹

Deregulation

In the years prior to the 1978 deregulation, a group of diverse allies that included liberal Democrats (Edward Kennedy), rural populists (Jimmy Carter), conservative Republicans (Ronald Reagan), and consumer advocates (Ralph Nader) challenged government intervention and called for a repeal of the 1938 regulatory legislation. In 1975, Senator Kennedy conducted a highly publicized investigation of the airline industry which made its managers and regulators appear inept. An issue that got particular attention was the example of the non-CAB, state-regulated airlines in Texas and California. These carriers attained higher levels of capacity utilization and superior financial performance with frequent point-to-point service at markedly lower fares. Basically, the intra-state carriers believed the market for air travel was much larger than the trunks or CAB imagined, and that the high price of tickets stopped many Americans from flying (**Exhibit 1**). Soon after, these carriers became a model for deregulated competition.

New intellectual insights about regulation and competitive markets also evolved in the 1970s. Many economists who analyzed the airline industry indicated that performance without regulatory intervention would approximate perfect competition. However, the economists did not reconcile the awkward fact that there were only a few players at the national level and even fewer in specific city pairs. By the late 1970s, some economists put forth a new model, called contestability, which contended that perfectly competitive outcomes could be achieved even in an industry where economies of scale and scope existed. An important feature of this model, easy entry and exit, would allow for the threat of "hit and run," economists reasoned, and would police the existing oligopolists into operating competitively. If, for example, an incumbent set its fare in a city-pair market unreasonably above an entrant's cost of providing service, it would be "hit" with new entrant competition. Retaliation by the incumbent, presumably in the form of lower fares, would bring the market back to competitive equilibrium, but this would not deter the entrant because it could easily "run" to another market where profit-making opportunities existed.

Contestability was supported by a number of factors. Barriers to entry seemed low. Industry inputs (maintenance, ground services, reservations), for instance, could be contracted from other firms. Airports were public property and the FAA provided communication facilities. Entrants could even lease airplanes instead of buying them outright. The barriers to exit seemed low as well. An entrant could quickly redeploy airplanes from one market to another, prompting CAB Chairman Alfred Kahn to call them "marginal costs with wings."² Within this contestable system, academicians believed the potential entrants had "standby authority" and need not enter as long as incumbents acted competitively. "In a contestable industry," some said, "the absence of entry should not be taken as a sign of predatory behavior by incumbents, but, on the contrary, as an indication of good behavior on their part."³

By the late 1970s, popular opinion and academic consensus held that regulation made the airline system inefficient and was not necessary to protect consumer interests. The move toward deregulation gained momentum as the CAB, under pressure, introduced some changes. It approved Texas Air's Peanuts Fare (50% off-peak discount) and later signed off on American's even broader

¹This section drew information from Professor Richard Vietor's "American Airlines and Deregulation," HBS No. 385-182 (Boston, Mass.: Harvard Business School Publishing, 1984).

²Thomas McCraw, *Prophets of Regulation*, (Cambridge, Mass.: Harvard University Press, 1984), p. 224.

³Elizabeth Bailey and William Baumol, "Deregulation and the Theory of Contestable Markets," *Yale Journal on Regulation*, Volume 1 (1984), pp. 111-137.

SuperSaver (discounts for advance purchase). The CAB also awarded several new routes for the first time since 1970.

When President Carter came into office, he appointed economist Alfred Kahn as CAB chairman. Kahn revamped the board, replacing lawyers with economists, and he advocated deregulation and free competition at every opportunity. Kahn set plans in action to unseat the regulatory regime, and by October 1978 President Carter signed the Airline Deregulation Act. From then on, price, entry, and exit were no longer to be dictated by the CAB, and airlines would be free to compete on all these dimensions. Specifically, the industry would undergo a “phase-out” period to ease the transition. The CAB’s control over entry and exit would continue until 1981, and the price range, now greatly widened, would be completely free in 1983. The government would eventually dissolve the CAB in 1985 and reassign its residual responsibilities to other appropriate agencies.

Industry Performance

To the surprise of airlines and their passengers, regulatory stability came unraveled almost immediately. Despite the intended “phase-out,” entry and price controls were basically gone by 1980. New competitors arrived and brought with them a managerial freshness that goaded older players to become more agile. These entrants included former intrastate carriers and upstarts such as People Express, New York Air, and Midway. By 1980, 22 low-cost entrants were challenging incumbent routes with low fares.

The incumbents could be divided into two groups—trunks and regionals. The dominant trunks were American and United, but they shared the trunk position with a handful of smaller-scale, nationally known counterparts (Delta, Eastern, Braniff, Continental) and thinner internationally oriented ones (TWA, Pan Am, Northwest). The regionals (USAir, Piedmont, Ozark, Western, Frontier, and Republic), which had historically played a secondary role, saw deregulation as an opportunity to surmount their local stature and compete head-to-head with trunk airlines.

The competition to survive and succeed intensified among all carriers following deregulation. The dynamics of competition also became more complicated because deregulation prompted a proliferation of new variables in the decision-making process. Correspondingly it was difficult for the players to agree on a “set of rules for the game.” One airline CEO’s early response went so far as to characterize business in the deregulated industry as “the closest thing there is to legalized warfare.” An economist who attempted to calculate a new entrant’s effect on incumbent performance determined that an incumbent’s equity value loss in a market contested by People Express was comparable to flying empty planes for three to five months.⁴

In controlling their airlines’ performance, the industry’s managers manipulated three primary levers—cost, yield, and load factor. *Cost* represented total operating expenses divided by the number of available seat miles (ASM). An ASM was one seat flown one mile, full or empty. *Yield* equaled total operating revenues divided by the number of revenue passenger miles (RPM). An RPM was one seat flown one mile with a passenger in it. *Load factor* measured capacity utilization and was the ratio between RPMs and ASMs. A simple accounting identity linked these elements to airline profitability:

Operating Income/ASM = [Yield × Load Factor] - Cost because

$$\frac{\text{Income}}{\text{ASM}} = \left[\frac{\text{Revenues}}{\text{RPM}} \times \frac{\text{RPM}}{\text{ASM}} \right] - \frac{\text{Expenses}}{\text{ASM}}$$

⁴Whinston, Michael D., and Scott C. Collins, “Entry and Competitive Structure in Deregulated Airline Markets: An Event Study Analysis of People Express,” *RAND Journal of Economics*, Vol. 23, #4 (Winter 1992), pp. 445-462.

By setting the left-hand side of the equation to zero, managers could calculate a break-even load factor, and they continually tracked this against actual levels.

Each competitor followed a unique path of lowering costs and finding the optimum balance between yields and load factors. Cost cutting, although challenging, was fairly basic and targeted the largest expense items—fleet efficiency and labor. Combined, these two accounted for 60% of an airline's total cost and remained fixed regardless of the number of passengers served. In striking the revenue-maximizing balance implicit in yield and load factor management, the industry made a number of breakthroughs, notably in route and marketing strategies. Through 10 years of implementation, these moves greatly changed the face of air travel. Competition at work in the system made air travel accessible to millions of Americans. It offered flyers new travel-related amenities and billions of dollars in savings (\$10 billion over the first 10 years by some estimates). At the same time, travelers were disgruntled over new inconveniences and more wary of their safety (**Exhibits 2 and 6**). From a public policy standpoint, airline deregulation represented the first rollback of New Deal protective legislation but it also raised questions about whether the government should impose some forms of re-regulation. The academics, who saw deregulation as the legislative embodiment of their consensus, agreed that efficiency and consumer welfare had improved substantially, but they also acknowledged that there were some unexpected outcomes.

The industry's competitors clearly suffered from the early impact of deregulation (**Exhibit 3**). Some evidence suggests competitor adaptation to the new environment over time, but the industry's performance cannot be isolated from the macroeconomic context. On the supply side, the second oil shock (1978-1980) more than doubled the price of fuel. Labor costs also faced upward pressure with an inflation rate of 10%. The acquisition of new aircraft became expensive with the prime rate at 19%. On the demand side, recession caused passenger traffic to slump. Another external shock, the 1981 Professional Air Traffic Controllers (PATCO) strike, limited carriers' access to the nation's busiest airports.

Industry Evolution

Overall, deregulation prompted many changes in strategic decision making across the primary areas of operation. The following sections track the strategic approaches employed throughout the first ten years of deregulated competition.

People Strategies

Because input cost increases could be passed on to customers during regulation, airlines generally acceded to union demands and granted regular pay hikes. At the onset of deregulation, this made incumbent labor bills more expensive than market rates. Airline mechanics, for example, earned 33% more than manufacturing mechanics and building cleaners started at \$12/hour. Furthermore, the industry's employees, 90% of whom were unionized, worked under ultra-restrictive rules that the unions had gained over time.

By comparison, new entrants had a considerable advantage, not only in lower costs (on average 40% less) but also in greater productivity. Almost all of their employees were nonunion, and they worked with extensive cross-utilization. To the incumbents, whose labor bill represented over 40% of total operating costs and over 70% of controllable costs, it was clear that great savings were possible in this area. The early response was to reduce work force and pay levels. These acts, however, were modest. Soon, the incumbents felt the imperative to take more formalized and drastic measures. This increased the volatility of management-labor relations at almost all incumbent airlines and resulted in a wide range of policies.

Perhaps the most controversial strategy was the use of Chapter 11 bankruptcy. First employed by Braniff (1982) and later by Frank Lorenzo's Continental (1983), this legal decision stated that the carriers' obligations to shareholders and creditors justified revocation of labor contracts. After bankruptcy the airlines had the opportunity to reorganize operations with or without union work forces. Continental acted quickly after Chapter 11 filing, firing employees and hiring them back without union contracts at wages 40%-60% lower. Braniff, on the other hand, abandoned the airline industry and returned two years later with a unionized work force one-tenth the size of its original one that worked with lower wages and more cross-utilization. Within the industry, these precedent-setting bankruptcies extended management's bargaining leverage by standing as examples of what could happen to labor if costs remained high. The establishment of nonunion subsidiaries, such as Texas Air's New York Air, also served a similar purpose. But, in the aftershock of deregulation, the unions became more adept in negotiations. They aligned themselves with teams of lawyers and bankers and worked to protect their own interests. TWA's work force, for example, halted Frank Lorenzo's takeover attempt and instead bargained with Carl Icahn for a more favorable management-labor pact.

At a number of other airlines, unions and management worked cooperatively to cut costs. Employees exchanged wage concessions for equity and influence in decision making through representation on company boards. Such partnerships unfolded differently at each airline. At Western, attempts at management-labor cooperation helped revive the near-failing airline. At Eastern, however, they contributed to the ouster of its chairman and the airline's eventual sale to Frank Lorenzo. By the late 1980s, both sides downplayed the long-term significance of cooperation. Management opinion, as typified by one spokesman, was that "the sharing of information can cause big headaches. How can union leaders sit on the board of directors? They can't represent their members and stockholders at the same time." One union leader summed up labor's sentiment: "Employees are better off in an adversarial relationship. This cooperation is just a means of problem solving during a transitional period."⁵

A new innovation for all of U.S. industry and for the airlines specifically fell in the middle of the confrontational to cooperative spectrum. The two-tier wage structure, first developed by American Airlines in 1983, let management hire new employees at wages 40%-50% lower than going rates. As new people joined the work force, unit labor costs declined. American's wage innovation was copied by many other airlines with varying levels of success.

By 1988, growing shortages of pilots and mechanics worked against future cuts and implied, for some, wage increases. Changes throughout the first decade of deregulation lowered the industry's average labor costs to 35% of operating expenses. More difficult to measure was the connection between worker commitment and operation quality. Delta, for instance, believed that the dedication of its work force gave it a great advantage regardless of wage reductions. Alternatively, others observed that a dispirited work force could exact a severe economic penalty, above and beyond the harried flight attendants and rude ticket agents who were bad for business. "Pilots routinely perform such management functions as deciding which approach path will save the most fuel. The same can be said for mechanics, who regularly make independent judgments that can add up to enormous profit or loss margins in the micro-managed economy of daily operations. No upper level management team, no matter how creative their cost cutting, can overcome the cost disadvantage of on-line employees who feel little allegiance to the company they work for."⁶

⁵George C. Lodge and Charles Heckscher, "Note on the U. S. Airline Industry in the 1980s," HBS Case No. 486-078 (Boston, Mass.: Harvard Business School Publishing, 1986).

⁶*Business Month*, September 1988, p. 34.

Plane Strategies

With regard to fleet planning, incumbent managers made choices long before 1978 based on assumptions that did not anticipate the new competitive environment. When deregulation came, the trunks found themselves at a disadvantage. Having historically suffered excess capacity, they found no relief as new entrants and growing regionals entered their markets. Further, their fleets of Boeing 707s and McDonnell Douglas DC-8s, which were built when fuel cost 10 cents per gallon, became gas-guzzlers as the price hit one dollar. The high fuel costs literally prevented any flight on these jets from breaking even (**Exhibit 4**).

In contrast, the regionals operated newer, more adaptable, fuel-efficient, aircraft (McDonnell Douglas DC-9s, Boeing 737s, Boeing 727s). Their fleets' shorter range and midsize capacity arrangements were also compatible with the hub network. Because these aircraft required only two rather than three pilots, they also had less expensive crew costs. New entrants also tended to operate these economical aircraft and almost always purchased in the second-hand market. People Express, for instance, started out with B-737s purchased from Lufthansa at \$4.5 million apiece. New ones, by comparison, cost over \$40 million. As the regionals and new entrants expanded their fleets, they continued to add efficient jets and purchased larger ones only as route plans dictated.

The trunks, on the other hand, had no choice but to reconfigure their fleets. As early as 1980, a number of the stronger trunk carriers began to retire fuel-inefficient aircraft and attempted to match their fleet mix with their combination of long-, medium-, and short-haul route segments. Financially weaker trunks continued to fly inefficient jets well into the 1980s and lagged behind in adjusting long/short-range fleet balance. For the trunks as a whole, poor operating results had lessened their ability to raise funds for aircraft purchase through the traditional means of issuing debt or offering equity. As a result, a number of alternatives to aircraft purchasing arose. Many airline managers worked to shift the financial burden and risk associated with jet purchase back to the manufacturer. American's Robert Crandall, for example, contracted with Boeing and Airbus for \$2.4 billion worth of orders and convinced both to retain ownership and lease back the aircraft to American. Aircraft manufacturers, however, had the ability and willingness to do this for only a few carriers. In search of attaining similar benefits, a number of smaller airlines entered into sale-leaseback agreements with financial institutions. Increasingly the trunks raised the portion of leased aircraft in their fleet and freed up capital for other system investments.

Despite these efforts, it was widely believed that the trunks' acquisition of new planes lagged far behind minimum requirements. Most waited until the mid to late 1980s to place orders for new aircraft with Boeing, McDonnell Douglas, and Airbus. As a result, these manufacturers were deluged with orders that pushed backlog levels to record highs (**Exhibit 5**). Waiting periods for new aircraft ranged from three to seven years by 1986. A number of leasing companies further complicated the buyer-supplier relationship by stepping ahead of the trunks and placing orders before the cascade began. By 1988, lessors owned 16% of the backlog. Industry reaction to the lessors varied from anger over their potential monopoly power on aircraft supply to speculation about their ability to provide a service for newly formed airlines without a credit history.

The traveling public, who once had a romantic fascination with flying, grew increasingly dissatisfied with the experience. Responding to fuel crises and new aircraft supply shortages, airlines had raised seating density and decreased leg room by as much as 20%. Overall, a manager's desire to please the customer became subordinated to his need to cut costs. When Boeing asked United's CEO what seating arrangement he preferred for his travelers, he responded "Don't bug me about that. I want the most efficient airplane. Just guarantee the seat-mile performance. As for customer preference, I couldn't care less."⁷ Perhaps having a more severe effect on travelers were the

⁷John Newhouse, *The Sporty Game* (New York: Knopf, 1982), p. 84.

allegations that austerity measures had led airlines to cut corners in maintenance. By the late 1980s, the U.S. fleet had been pushed beyond reasonable levels of wear and tear, and a full 20% of the U.S. fleet was older than the 20-year standard life. The public's mounting uneasiness over safety was also heightened with the rash of aircraft rips, tears, accidents, and related deaths during the 1980s.

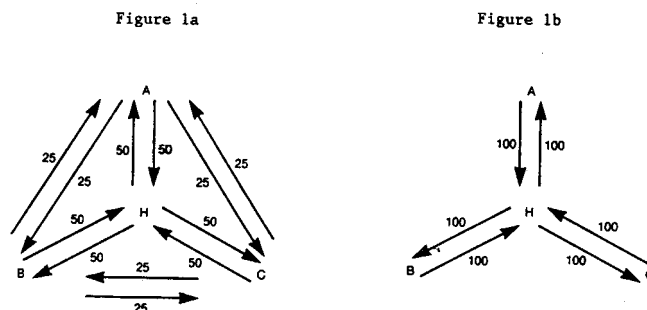
Route Strategies

As a derivative of the 40-year history of government awards, each regulated airline ran a route network of fragmented and semi-exclusive point-to-point segments. Deregulation advocates envisioned an evaporation of such monopolies and anticipated that multiple carriers would service each market. Yet with freedom of route entry and exit, the airlines rationalized their systems in unexpected ways.

One of the most immediate incumbent responses involved a realignment of fleet and route capacity. For the trunks, this meant adding more profitable long-haul, high-density markets and exiting government subsidized communities, a change that was compatible with their wide-body, long-range jets. Eastern, for instance, which had historically serviced the East Coast corridor, picked up transcontinental routes and stopped serving cities such as Roanoke, Virginia, and Chattanooga, Tennessee. United connected its Midwest stronghold to Honolulu and Florida while abandoning communities such as Salem, Oregon. These actions created opportunities for the regionals, which were anxious to supersede their "puddle-jumping" status and were equipped with mid-range aircraft to do so. While the trunk airlines pruned their short-haul routes, the regionals filled the gaps.

Another more significant phenomenon occurred with the industrywide emergence of the hub and spoke system. During regulation, the hub concept was neither recognized nor needed by most airlines. Even the intrastate airlines, models of a deregulated future, had linear route structures. Deregulation, however, revealed that a hub offered compelling economic advantages. The key to the network was to schedule dozens of feeder flights, the spokes of the system, into the hub airport so that they coincided with the carrier's fewer long-haul routes. Each spoke added a few passengers to the more lucrative long hauls. With this single-point focus of human and material resources, an airline achieved scale economies by spreading operating costs over multiple arrivals and departures. Further, the total number of markets in which an airline participated was a multiplicative function of the spokes it connected to its hub, yielding economies of scope. If an airline's hub had 20 spokes to the east and 20 spokes to the west, for example, the carrier could provide one-stop service to 440 city pairs. Additionally, the airline could serve these markets with fewer aircraft, fewer crew members, and higher frequencies.

Running a hub system allowed for more effective yield and load factor management. Passengers flying in from a spoke city and looking to transfer at the hub could be retained with the enticement of easy connections and baggage transferring. The hub also let the airline monitor its traffic patterns over time, allowing it to predict daily travel with reasonable accuracy and to plan day-to-day operations more effectively. Other more basic load factor improvements were linked to the geometry of the hub and spoke network and can be illustrated with the following example:



Imagine that 50 people travel in each direction between a hub city (H) and three spokes (A, B, and C), and that 25 people travel daily in each direction between the spoke city-pair markets (**Figure 1a**). If the smallest effective plane carries 100 passengers, a carrier providing nonstop service in each market will average a load factor of 37.5%. By switching to a hub and spoke network, however, the carrier could, in this extreme example, increase its load factor to 100% (**Figure 1b**).

Soon after 1978 there was a rapid acceleration of hub development across the United States. The airlines that fared best used the hub in a way that capitalized on regulation era strengths. United, for example, with strong brand identification in the Midwest and West, developed Chicago and Denver as extensive hub operations and revamped its entire route map to accommodate them. In contrast, the Dallas/Fort Worth-based Braniff pursued a “helter skelter” expansion and used deregulation’s entry freedom to begin flying new routes in the Northeast, Midwest, and West—where it never before had visibility. Soon after, Braniff had an undernourished system. Unable to achieve break-even load factors, it filed for bankruptcy. In hub development, the trunks focused on major interior U.S. cities with the greatest potential for traffic transferring (Atlanta, Chicago, Dallas/Fort Worth, Denver). The regionals concentrated their efforts on secondary cities such as Pittsburgh and Salt Lake City, while the new entrants preferred underutilized satellite airports (Dallas’s Love Field, New Jersey’s Newark) where they could sign low-cost leases. Hub setup required investments on the order of \$100 million - \$150 million to build super-sized terminals and acquire strategically located gates.

As the systems evolved, almost all hub airlines formed alliances with commuter carriers to secure increased feed. The commuters served as air taxis and delivered passengers on small aircraft through short-haul, low-density route systems. Hub airlines managed the commuters’ schedules so that arrivals coincided with their own longer-haul departures. They also facilitated passenger connections by sharing airport facilities with commuters and providing reservation and ground handling services.

As more and more airlines began to develop hub systems, gate and terminal space became scarce. In welcoming Piedmont to Charlotte, for instance, airport administrators were excited over the new jobs and increased air service the community would receive and extended almost all the gates to the carrier in a 25-year lease (1981-2006). Similar deals between carriers and city administrators were struck throughout the country during the early 1980s. In most instances, hub airlines and local governments jointly financed airport development. This made new construction a catch-22, leaving the airport authority in the position of negotiating with the dominant airline to bring in new competition. For example, after United paid off municipal bonds valued at \$55 million for improvements to O’Hare’s B concourse, its CEO stated, “I don’t intend to let competitors use it.”⁸ Any attempt to circumvent this problem by constructing entirely new airports held only a glimmer of hope for new entrant and growing incumbent airlines. In general, it took 10 years to build an airport, and in 1988 only two new projects were under way (Denver and Austin). Industry participants began to complain that the federal government had underinvested in the nation’s infrastructure and petitioned for more new airports.

As competition grew between airlines at hubs, many cities that had been served by more than two carriers had seen at least one leave. Furthermore, following the 1985-1986 merger wave, several hubs were left overwhelmingly dominated by a single carrier. After TWA acquired Ozark, for example, it controlled over 80% of St Louis’s daily departures. Ozark’s disappearance left the small Southwest Airlines as TWA’s biggest competitor. Southwest’s two gates were located at the farthest ends of the largest concourse, separated by a half-mile stretch of red and gray TWA gates. In 1988, a government inquiry discovered that after the merger fare hikes of up to 18% occurred at St Louis. Some analysts, however, pointed out that the trend toward hub development might not persist in the future as new, efficient, midsized aircraft made overflight service more feasible.

⁸*Wall Street Journal*, July 20, 1987, p. 13.

Marketing Strategies

As the CAB relaxed its pricing controls, many airlines added new discounts to their simple first class/coach and peak/off-peak formats. The first innovation, American's SuperSaver, offered 45% discounts (with restrictions of 7-day minimum stay and 30-day advance purchase) and was designed to induce leisure travelers to fly in seats that otherwise would have gone empty. Many other airlines set up similar controlled programs but, by 1980, these broke down in response to increased competitive pressures (**Exhibit 6**). Ticket giveaways, 49-cent fares, and Kids-Fly-Free with cereal boxtops were only a few among the many gimmicks airlines used to entice travelers. Such ploys were particularly successful in heightening name awareness for airlines that entered new markets.

Initially, a handful of trunks avoided such tactics and attempted to exert leadership in rational pricing. Delta made public its distaste for "Bingo in the Sky" promotions. American vehemently opposed uncontrolled fares and attempted to educate the industry on the benefits of structural discounts like the SuperSaver. Cash-poor trunks (Eastern, Pan Am, TWA), however, did not follow. They were quick to slash fares to generate on-hand cash, and the holdouts reluctantly matched them to protect market share.

By 1982, as city-pair rivalry intensified, fare wars exploded across the nation. Between 1982 and 1984, prices were so low that almost anyone (business and leisure travelers alike) could fly anywhere at any time for \$99. Along the most heavily traveled routes, the number of carriers offering service sharply increased. In the New York to California markets, the original three carriers (American, United, TWA) came up against five others and correspondingly saw their market share levels plummet. As Eastern, the first newcomer, offered low fares to fill its empty seats, the original three retaliated by matching price and increasing capacity—a process systematically employed as each new airline arrived. Similar events also unfolded along the heavily traveled Northeast to Florida routes.

Hubs shared between a number of competitors became another focal point for fare wars. At Dallas/Fort Worth, for example, competition ensued between American and Delta and their smaller neighbors, Braniff and Texas Air. Texas, which offered the least number of flights, began to introduce several low fares, and initially the other three refrained from retaliating. Shortly after, however, Braniff stepped up and matched Texas, compelling the other two to follow. According to one frustrated executive, "Texas is a pimple. They don't do as much business in a month as we do on a bad Monday. But Braniff just couldn't leave them alone. I guess that proves the old rule that the industry is led by its dumbest competitor."⁹ After three years of price cutting on flights out of Dallas/Fort Worth, American's CEO Robert Crandall made a now infamous call to Braniff's head in an attempt to restore price sanity. "Raise your goddamn fares by 20% and I'll raise mine the next morning," Crandall said. Braniff instead recorded the conversation and reported Crandall to the Justice Department, which in turn filed a federal suit against him and American for price fixing. The department later dismissed the suit after Crandall promised not to discuss fares with competitors again.

New-entrant arrival brought the incumbents another issue to contend with: across-the-board, unrestricted low fares. This was a new mode of pricing for the industry, and all new entrants, regardless of their position along the service spectrum (catering to business or budget flyers), employed it. New York Air challenged Eastern's shuttle market with fares 50% lower, and it even offered new passenger amenities such as free bagels and newspapers. No-frills People Express similarly underpriced its competitors. Popular entry points for the upstarts were the high-density markets. Here they could "cream-skim" because trunks, as part of regulation's legacy, were still

⁹*Fortune*, October 20, 1980, p. 27.

subsidizing their costs over entire route systems. This simple strategy was viable for the new entrants because deregulation proved that travelers were price sensitive and since, in theory, the newcomers could exploit their cost advantage and still make a margin.

The incumbents' early response to the new entrants depended on the real threat that they posed. The Eastern shuttle quickly retaliated against New York Air but, by comparison, no one challenged the entrance Midway made with three jets to a handful of Midwestern markets from a secondary Chicago airport. Overall, with costs still high, any incumbent retaliation strapped them financially and, because they had dominant market shares, retaliation hurt them more in absolute terms. Over time incumbent retaliation grew increasingly necessary as the entrants stretched their route systems. For instance, by 1983 Midway's system spanned from New York to Washington, D.C., to Dallas/Ft. Worth. Retaliation also became more feasible as the incumbents pulled their costs down and devised more subtle means to cope with disarray in pricing.

Well-developed hub systems let incumbents underprice entrant point-to-point competition and still maintain satisfactory systemwide yield levels. Economic advantages of the hub also made it possible for the incumbents to price travel between city pairs through a hub lower than an entrant could price direct flights. More sophisticated retaliatory responses came as incumbents began experimenting with new pricing schemes. Instead of simply matching new entrants in contested markets and increasing fares on less competitive routes, incumbents began to practice controlled matching. For example, United successfully fended off People Express's 1984 incursion into its Chicago-Newark market by claiming in ads that it would match People Express's \$79 fare (United's standard coach fare was \$258) without sacrificing free baggage handling and meals. Relegated to the fine print was that unlike People Express, United had advance purchase, length-of-stay, and capacity restrictions. People Express's founder, Donald Burr, complained of such practices by saying, "It's a bait-and-switch operation. You call and they don't have the fare you want, but they can fly you for a much higher rate. You're on the phone, so you just go along."¹⁰

Eventually, airline managers further unbundled the price structure. In doing so they unleashed a myriad of pricing possibilities that allowed them to maintain high-yield business travelers while offering unsold capacity to leisure travelers at new entrant levels. This yield management resulted in a complex structure with multiple levels of passenger fares. Each tier had its own purchase requirements and capacity restrictions, and passengers typically paid higher fares for travel flexibility. Wild divergences existed and a study of 1986 prices showed that passengers paying the highest 10% of fares laid out more than twice the amount paid for the lowest 10% of fares.¹¹ Business travelers felt somehow that this deteriorated the value of the product, and one even wrote directly to CAB Chairman Alfred Kahn, complaining of having once had to sit next to a "hippie." American's Robert Crandall jokingly said that yield management let carriers offer "the adjustable-rate air fare—tell us what you can afford and we'll sell you a ticket."¹² Northwest's CEO estimated that through adept yield management he could add \$40 million to \$50 million to the company's 1987 operating profits if he could raise Northwest's average revenue per passenger mile by a mere one-tenth of a cent. Such an increase would add only \$1 to the fare of a passenger traveling between Minneapolis/St. Paul and New York.

To help them make such intricate pricing decisions, managers became highly dependent on information provided by computer reservation systems (CRSs). The CRS, pioneered by American Airlines and IBM in 1953, was designed initially to automate the manual reservation process. As the systems evolved, airlines realized that information captured in the process could aid in fuel,

¹⁰*Fortune*, October 29, 1984, p. 8.

¹¹Severin Borenstein and Nancy Rose, "Price Discrimination in the U.S. Airline Industry," National Bureau of Economic Research Working Paper #3785, July 1991.

¹²*Fortune*, October 29, 1984, p. 24.

maintenance, and customer service planning. Following deregulation, the systems became particularly useful in devising complex fare schemes and enhancing yield management abilities because they held detailed historical profiles of each flight. However, not all carriers had a CRS, and the ones that did invested up to \$200 million to develop them. Of the five airlines that had systems, three (American, United, TWA) integrated them tightly into their marketing efforts, while the other two (Eastern, Delta) did not.

Overall, the systems introduced a high-tech element to the industry and made giveaway fares virtually obsolete. The CRS-owning airlines generally employed over 100 people to monitor current ticket sales against historical selling patterns for all flights in the upcoming year. These operators continually made adjustments in price levels and the ratio of discount to full fare seats as tickets sold. By 1987 CRS penetration in fare setting was quite extensive. On a single day American used its CRS to make 106,000 fare changes.

In other uses, the CRS became a tool for communicating complicated and ever-changing information to the traveling public. During the regulated era, customers purchased tickets either from the airlines (70% of the time) or travel agencies (30%). Travel agents used a telephone book-sized document called the *Official Airline Guide* as their primary source of information. This was reliable enough because schedules and fares changed infrequently. With deregulation, however, the number of fare offerings jumped from thousands to millions and the rate of change shifted from twice a year to thousands of times per day.

As early as 1967, several attempts were made by industry participants to investigate the feasibility of marketing a cooperative CRS to the nation's travel agents. In 1975, American conducted a study which revealed that a jointly financed system would not only be feasible but it would also be economically attractive. An industry committee involving all airlines soon after formed to put together a cooperative CRS. United, however, backed out. It would have shouldered the majority of the financial burden since costs were to be allocated according to passenger volume. United claimed the cooperative system was a costly industry solution that would serve as an equalizer among airlines. Instead, United announced its intention to market its own APOLLO system to travel agents in 1976. The industry's cooperative CRS attempt was quickly abandoned. American soon revealed plans to distribute its SABRE system, and TWA did the same for PARS. These systems gave the airlines control over displaying travel options to customers.

Agents were willing to subscribe to one system or another because the owner-airlines amended each one to include schedule and fare information for most carriers. Distribution of the systems usually began in regions where the owner-airlines had a significant presence. Early on it appeared that United, with the largest route system, would have an advantage. American prevented this, however, by devising the co-host plan. In exchange for a fee, it gave nonowning airlines favorable display in its CRS. American specifically targeted airlines outside its own geographic region to be co-hosts, and, in turn, these co-hosts promoted American's CRS to travel agents in their areas. Soon after, United began to sign on co-hosts. By the early 1980s, most nonowning airlines were co-hosts with either American or United. Nationwide promotion of these systems enabled American and United to tie up a majority of the nation's travel agents. By the mid-1980s, travel agents accounted for more than 80% of all ticket sales and the CRS became the primary source by which a travel agent defined a customer's options. Because the 1978 decision also deregulated travel agent commissions, CRS-owning airlines gained leverage in aligning travel agents with their airline through "override" commissions, payments over and above the base level, for steering volume business to the airline. It was estimated that 6% of American's 1986 revenues came from such incremental volume.

Most co-hosts thought co-host fees were minimal when compared with the investment required to develop and market a CRS, but by 1984 other costs of not owning a system surfaced. A number of carriers dependent on co-hosting alleged that American and United used market power in providing access to their CRSs to affect competition in air travel. A main point of contention was the

order in which the systems displayed available flights between city pairs. Through complicated computer programs, American and United prioritized flights and biased the systems to display their own services first, followed by those of the co-hosts. A typical CRS screen displayed 4 to 10 flights. An agent searching for a flight could scroll up subsequent screens, but studies showed that faced with time constraints, an agent was not likely to do so. In fact, a government inquiry discovered that 70%-90% of the time agents booked passengers on first-screen flights.

Another allegation was that the owners exercised unfair pricing discrimination in charging co-hosts booking fees. American and United's fees ranged from \$0 to \$1.05 per ticket, and co-hosts with large route systems had an advantage in negotiating for low fees because their presence was vital to a travel agent's information needs. Smaller carriers and new entrants, on the other hand, had almost no bargaining power. Their absence from a CRS was not likely to affect agents, and American and United used this to control access. United, for instance, removed New York Air and Midway displays from APOLLO when booking fee agreements could not be reached.

Responding to these charges, the CAB established a set of rules designed to eliminate display bias and prohibit unjust fee discrimination. The rules did nothing, however, to dispel the tactical advantage a CRS owner gained through the valuable information it collected on competitors' pricing and scheduling strategies. Owners could see in real time the success of competitors' marketing initiatives and respond accordingly. By the late 1980s, the government was investigating the possibility of requiring owner-airlines to divest their systems.

Throughout the 1980s, the CRS came to play an integral role in some additional areas of marketing. Hubbed carriers reinforced their relationships with commuter airlines by sharing identification codes within the systems, making it impossible for travel agents and customers to distinguish between propeller craft and jetliner service. Nonaligned commuters found it difficult to survive, and most were forced to ally themselves with larger airlines.

The CRS also aided frequent flyer program management. The programs, first developed by American in 1981 and soon after copied by most other airlines, aimed to induce brand loyalty among the most sought-after customers—business travelers. These frequent flyers made up a disproportionately large amount of airline traffic and were not at all price sensitive because they flew on behalf of their employers who paid for the tickets. The programs awarded travelers with free flights—a pittance for the airlines that operated at 60% capacity. The CRS came into play by spelling out blackout dates and other restrictions for award flights. For carriers that were unable to manage the programs on computer reservation systems, frequent flyer programs were costly because award travelers often displaced fare-paying customers. The programs most popular among frequent flyers were connected to the airlines with the broadest route systems. An award on New York Air for yet another flight between New York and Boston was not as valuable as an award flight on TWA to Paris or Rome. By 1988, however, the consensus was that any advantage in running such a program had evaporated and that the venture had become a zero-sum game. Typical frequent flyers held membership in at least three plans, if not more.

Industry Restructuring

Having to streamline costs and contest fiercely for every passenger and revenue dollar separated strong competitors from weak ones. Participants that could not survive in the highly competitive environment collapsed. Beginning in 1985, weaker players that had not already exited by bankruptcy got caught in a frenzy of mergers and acquisitions. Among the former trunks, regionals, and new entrants, 45 left the industry and 25% of their RPMs changed hands. Additionally, a number of hubbed airlines acquired their commuter affiliates. These mergers raised the concentration of the industry and left only eight airlines controlling 91% of U.S. traffic.

All of these mergers had been allowed partly because the approval process for mergers in the airline industry differed from most others. As a legacy of regulation, the Department of Transportation (DOT) and not the Justice Department had final say. The DOT had been more liberal in its approvals than the Justice Department might have been. It allowed the Northwest-Republic and the TWA-Ozark mergers even though the Justice Department advised against them. The DOT's power over mergers was transferred to the Justice Department at the end of 1988, and this made the future of further industry consolidation uncertain.

Analysts called those airlines that survived the restructuring phase "super carriers" and noted that the deals increased their ability to manage operations across the primary strategic dimensions. In some instances, dominant carriers strengthened hub systems by acquiring the secondary carriers at a shared hub. TWA, for example, acquired its St. Louis neighbor, Ozark. Similarly, Northwest took over Minneapolis/St. Paul-based Republic. By consolidating hub operations, these carriers not only increased local market power but also reaped savings from reduced overhead in ground operations.

Also by acquisition, carriers gained quick and easy entrance into new geographic territories. For example, Delta's acquisition of Western gave the carrier an opportunity to stretch its route system outside of the southeast. Overall, any acquisition added to a carrier's portfolio of gates and terminals which were scarce assets. Acquisition also allowed airlines to acquire aircraft at cost. When TWA picked up Ozark it received 50 DC-9s. Buying the same number of seats in new aircraft would have cost \$775 million, over three times what TWA paid for Ozark.

Other acquiring carriers reaped benefits in the marketing area. Texas Air's acquisition of Eastern gave the conglomerate access to Eastern's System One CRS and a much-needed lift in yield management and ticket sales through travel agencies. Airlines, however, had to balance the potential benefits of mergers against the very real operating problems they created. Texas Air, for instance, experienced tremendous difficulty in consolidating the operations it acquired. Horror stories of poor staffing, delayed flights, and lost baggage alienated business travelers and even cut into price-sensitive vacation travelers' willingness to fly that airline. Deterioration of service at this airline and others prompted a consumer revolt and motivated both houses of Congress to debate bills calling for some new forms of regulation. **Exhibit 7** traces the industry restructuring wrought by the mergers and acquisitions.

By the late 1980s, the next phase of industry restructuring appeared to be the globalization of air service. A number of U.S. carriers had already made advances into Europe and Asia after mergers fortified their domestic infrastructures. For others, global alliances posed an alternative to in-house expansion and allowed them to bypass the complicated bilateral agreements that had to be negotiated between the U.S. airline and its foreign host country. United, in such a deal, formed what it called "the ultimate air bridge" when it joined forces with British Air in late 1987. As part of the extensive agreement, the two carriers came to share a common CRS code, airport facilities, and frequent flyer programs, all of which gave United an opportunity to serve Europe without flying there. Following United's lead, Texas Air struck a similar deal with SAS as did Delta with Swiss Air. It was surmised that the European carriers viewed these marketing mergers as avenues to strengthening their own networks before the advent of 1992. One U.S. investment banker summed up the American position: "We've had national deregulation. The next thing is international deregulation."¹³

¹³USA Today, October 5, 1988, p. 1B.

Exhibit 1 CAB versus Intrastate Sample Service Levels, 1974

CAB Market	Miles	Fare	Passengers	Intrastate Comparable	Miles	Fare	Passengers
Chicago-Minneapolis	339	\$38.89	1,424,621	Los Angeles-San Francisco	338	\$18.75	7,483,419
New York-Pittsburgh	335	37.96	975,344				
Boston-New York	191	24.07	2,493,882	Houston-San Antonio	191	13.89	312,811
Reno-San Francisco	192	25.93	312,811				

Source: *CAB Practices and Procedures*, U.S. Congress, 1975.

Exhibit 2 1989 Passenger Survey**Concerning Safety:**

Compared with five years ago, what do you think about the safety of air travel?	Safer:	20%
	Less Safe:	64%
	No Different:	11%
Have you ever considered postponing a flight because of concern for your safety?	Yes:	14%
	No:	85%
What do you see as the major problems making air travel less safe?	Aging Aircraft:	72%
	Poor Maintenance:	70%
	Threat of Terrorism:	60%

Concerning Flight Delays:

Do you think that delays are becoming more common or less common?	More Common:	48%
	Less Common:	8%
	Staying the Same:	38%

Concerning Fares:

	<u>Yes</u>	<u>No</u>
Are airfares rising because airlines are getting greedy?	44%	52%
Were cheap airfares of the mid-1980s too good to last?	75%	22%
Are fares going up because mergers have decreased competition?	73%	23%
Are airlines raising their fares because their costs are going up?	58%	40%

Concerning Deregulation:

Ten years later, how do you feel about deregulation?	It was a good idea:	32%
	It was a bad idea:	23%
	It didn't make a difference:	35%

Source: Adapted from surveys conducted by *Business Week* and *Time*.

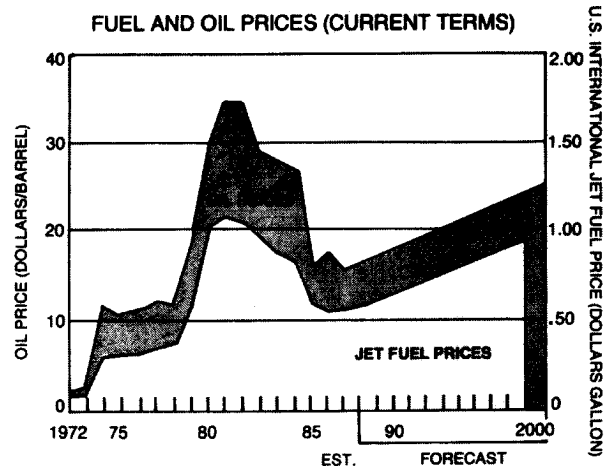
Exhibit 3 Industry Performance

	RPM (000)	ASM (000)	Actual Load Factor (%)	Break-even Load Factor (%)	Total Operating Revenue (\$000)	Total Operating Expense (\$000)	Operating Margin (%)	Yield (¢)	Cost (¢)
1978	226,781,368	368,750,530	61.50	57.43	\$22,883,955	\$21,519,092	5.96	10.1	5.8
1979	262,023,375	416,126,429	62.97	62.50	27,226,665	27,027,610	.73	10.4	6.5
1980	255,192,114	432,535,103	59.00	59.09	33,727,806	33,949,421	(.66)	13.2	7.8
1981	248,887,801	424,897,230	58.58	59.18	36,662,555	37,117,325	(1.24)	14.7	8.7
1982	259,643,870	440,119,206	59.00	60.00	36,407,635	37,141,070	(2.01)	14.0	8.4
1983	281,829,148	464,537,979	60.67	60.14	38,953,672	38,643,262	.80	13.8	8.3
1984	305,115,855	515,323,339	59.21	56.25	43,825,047	41,673,536	4.90	14.4	8.1
1985	336,403,021	547,788,432	61.41	59.71	46,664,414	45,238,150	3.01	13.9	8.3
1986	366,545,855	607,435,847	60.34	58.69	50,524,933	49,201,832	2.62	13.8	8.1
1987	404,471,484	648,720,938	62.35	59.57	56,985,709	54,516,820	4.33	14.1	8.4
1988	423,301,559	676,802,327	62.54	58.82	64,571,936	61,114,729	5.35	15.3	9.0

Source: Air Transport Association

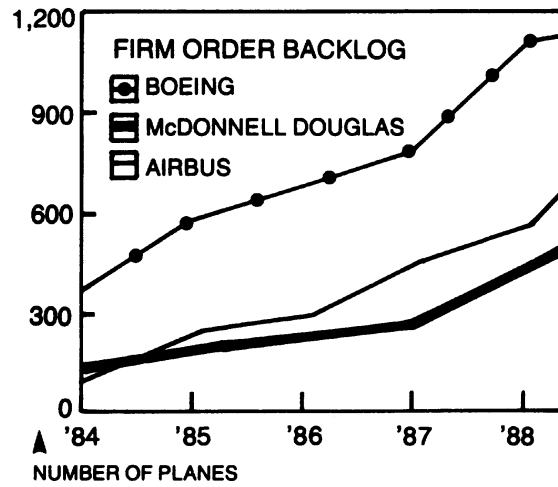
Exhibit 4 Fleet Specifications and Fuel Prices

	Boeing 747	McDonnell Douglas DC-10	Lockheed 1011	Boeing 767	Airbus A-300	Boeing 707	McDonnell Douglas DC-8	Boeing 757	Boeing 727	McDonnell Douglas DC-9	Boeing 737
First flown	1970	1970	1970	1984	1972	1955	1955	1982	1963	1965	1967
Average seating capacity	415	255	288	196	240	153	199	185	146	125	117
Range (average flight length in miles)	2,054	1,250	995	1,000	1,020	670	865	620	630	650	390
Widebody/narrowbody	W	W	W	W	W	N	N	N	N	N	N
Number of engines	4	3	3	2	2	4	4	2	3	2	2
Number of pilots	3	3	3	2	3	3	3	2	2	2	2
Cost/seat-hour (fuel, crew, maintenance)	\$9.15	\$10.50	\$9.35	\$8.75	\$9.50	\$14.35	\$12.35	\$7.50	\$11.50	\$9.50	\$10.00



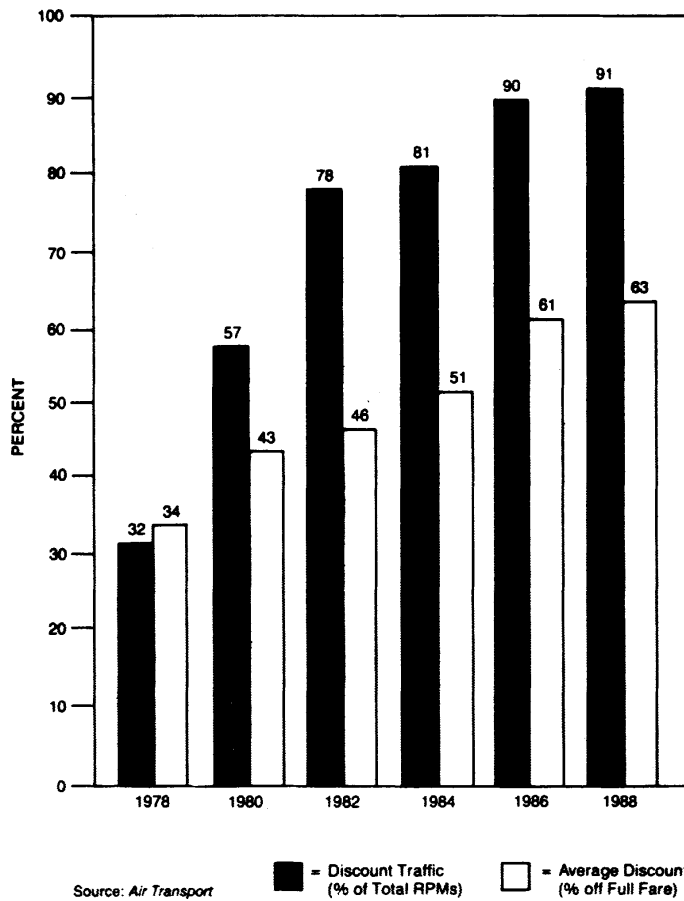
Source: Professor R. Simpson, MIT, and Aviation Week and Space Technology

Exhibit 5 Aircraft Order Backlog



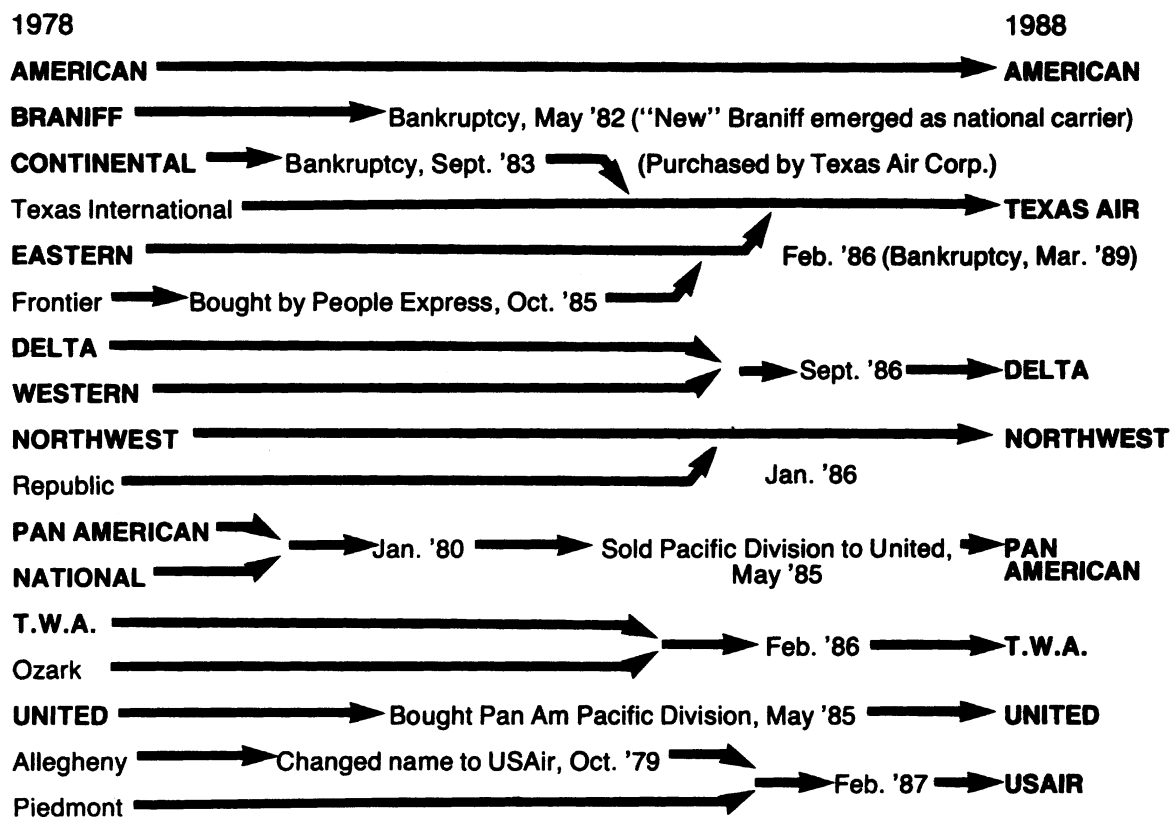
Source: Adapted from *Businessweek*

Exhibit 6 Evolution of Discount Fares



Source: Air Transportation Association

Exhibit 7 Industry Consolidation



Source: Adapted from *Airline Economics, Inc.* and the *Wall Street Journal*

Note: Former Trunk carriers are in bold type, former Regionals are in lower case.