6 Economic Characteristics of the Airlines

Introduction The Airlines as Oligopolists Other Unique Economic Characteristics The Significance of Airline Passenger Load Factors

Chapter Checklist • You Should Be Able To:

- Describe the general characteristics of oligopolies
- Explain how the number of carriers, and their market share, has changed since deregulation
- Identify several of the barriers to entry into the airline industry
- Define *economies of scale*, and discuss how they relate to the airline industry
- Describe the effects of mergers on the airline industry
- Discuss the concept of mutual dependence as it relates to the air carriers
- Explain how the industry is moving toward oligopolistic pricing
- Describe the economic characteristics unique to the airlines
- Explain the significance of load factors in relation to costs and services offered

INTRODUCTION

Economists usually describe the certificated airline industry as closely approximating an oligopolistic market structure. An **oligopoly** (from the Greek *oli*, meaning "few") is an industry composed of a few firms producing either similar or differentiated products. A "few" can be 5 or 10 or 100 firms. A large percentage of our nation's output of goods and services is produced by oligopolistic industries: steel, automobiles, oil, and aluminum, to mention a few. Oligopolistic industries typically are characterized by high **barriers to entry.** These usually take the form of substantial capital requirements, the need for the technical and technological know-how, control of patent rights, and so forth.

In addition to few sellers, a similar product, and high obstacles to entry, oligopolistic industries tend to share several other characteristics.

- 1. *Substantial economies of scale.* By **economy of scale**, economists mean decreases in a firm's long-term average costs as the size of its operations increases. Firms in oligopolistic industries typically require large-scale production to obtain low unit costs. Large-scale production is afforded by intensive labor and management specialization of job responsibilities, utilization of the most efficient technology available, and effective use of by-products. If total market demand for the product or service is sufficient to support only a few large firms of optimum size, competition generally ensures that only a few such firms will survive.
- 2. *Growth through merger.* Many of the oligopolies that exist today have resulted from mergers of competing firms—in mergers that may date back to the late 19th or early 20th century. In 1901, for example, the U.S. Steel Corporation was formed from a merger of 11 independent steel producers. Or think of the number of U.S. automobile manufacturers back in the 1930s, 1940s, and 1950s. Well-known companies like LaSalle, Hudson, Packard, and Studebaker have long since gone. The purpose of most mergers is to gain a substantial increase in market share, greater economies of scale, more buying power in the purchase of resources, and various other advantages that smaller firms do not possess to the same extent.
- 3. *Mutual dependence.* When there are only a few firms in a market, it matters very much to each firm what its rivals do. Economists call this situation **mutual dependence.** The small number of sellers in an oligopolistic industry makes it necessary for each seller to consider the reactions of competitors when setting prices. In this sense, the behavior of oligopolists in the marketplace may be somewhat similar to the behavior of players in such games of skill as chess, checkers, or bridge. In these games, the participants try to win by formulating strategies that anticipate the possible counterreactions of their opponents.
- 4. Price rigidity and nonprice competition. In an oligopolistic industry, firms find it more comfortable to maintain constant prices and to engage in various forms of nonprice competition, such as advertising and customer service, to hold, if not increase, their market shares. Price reductions, when they occur, are sporadic and usually come about only under severe pressures resulting from weakened demand or excessive capacity.

THE AIRLINES AS OLIGOPOLISTS

With the general characteristics of oligopolies as a background, let's see how the airline industry compares and then take a look at several unique characteristics.

Number of Carriers and Market Share

With the easing of CAB regulations and passage of the Airline Deregulation Act, the industry entered an era of intense competition. Major airlines and the former local-service carriers began competing with one another; charter carriers moved into scheduled service; former intrastate carriers, such as Air Florida, Pacific Southwest Airlines, and Southwest, moved into interstate markets; and many new firms began offering service. As a result of this new entry, discount fares proliferated, fare wars began, and total traffic increased dramatically as passengers took advantage of previously unheard-of coast-to-coast fares. The number of RPMs increased dramatically. The established major airlines, with the exception of those that were failing, shared in the traffic growth, but the new entrants made substantial inroads into market share. Between 1978 and 1986, the share of total traffic of the incumbent trunk airlines declined from 94 percent to 77 percent.

In this period, there were 198 certificated (Section 401) carriers providing interstate passenger service in the United States. If we were to add the 36 carriers operating before deregulation, this would give 234 carriers operating at the start of 1987. Unfortunately, instead of the industry expanding, as many proponents of deregulation visualized, 160 of those carriers either were merged, liquidated, or decertified or were not operating or never did operate under a certificate. Therefore, at the start of 1987, only 74 certificated carriers remained. The total number has increased in recent years with the addition of smaller certificated carriers and the demise of some of the larger airlines, including Eastern and Pan Am. The shrinking number of larger carriers has improved the market share of the remaining major carriers, such that the largest carriers now have a somewhat greater market share than before deregulation (although they are not all the same carriers).

Commuter air travel followed a similar pattern, with the number of service providers reaching 246 in 1981 and declining to 109 by the end of 1996. Despite this consolidation, RPMs increased almost sevenfold, from 2.1 billion to 14.2 billion. At the end of 1996, 35 of the top 50 commuter airlines had code-sharing agreements with one or more major or national carrier. Those 50 airlines controlled 99 percent of the total commuter market share.

As of early 2006, a number of changes occurred in terms of code-sharing agreements, and these changes affected air carriers of all sizes around the world. Because of a large number of bankruptcies, airlines going out of business, and changing partnerships, alliance members were negatively impacted in many cases. Some alliances lost partners, resulting in decreased market share and increased expenses. As of the end of 2006, numerous changes were still occurring as a result of an unstable airline industry.

Unquestionably, the airline industry, with its small number of companies and concentration of market share, meets the first characteristic of oligopolist firms. Most analysts expect that the consolidation that began in the early 1980s will continue, with only a handful of major carriers remaining by the turn of the 21st century. These carriers will be supplemented by 100 or so smaller airlines providing regional/commuter service.

High Barriers to Entry

One expectation of deregulation was that carriers would have relatively free access to markets because of the mobility of the airlines' chief assets—aircraft. Carriers dominating individual markets would not charge monopolistic fares, according to this theory, because of the ease with which a competitor could enter the market and compete with the incumbent carrier by charging reduced fares. Thus, the mere threat of entry was expected to discipline pricing. Substantial new entry did occur during the early phase of deregulation, but since the mid-1980s, the pace has slowed and the industry has become more concentrated.

Access to many markets has become extremely difficult in recent years because of the difficulty of obtaining terminal space at many hub airports and the risk associated with competing with an airline at one of its hubs. A competitor that wishes to challenge another carrier at its hub faces considerable financial outlays. The cost of providing a competitive level of service at a hub is substantial: expenditures for advertising, personnel, and aircraft operations are crucial during start-up, when the competitor attempts to win business away from the major carrier. The risk of being unable to recover these outlays is the largest single deterrent to entry at hub airports.

It is difficult to compete with a major carrier during start-up because the major carrier has inherent advantages; some result from the scope of its operations, others from marketing. The larger network of the major carrier allows it to increase service at a lower additional cost. In addition, by having an extensive network, the major carrier is more likely to attract passengers, who then form impressions about the quality of service on other routes. Marketing builds on these advantages. Frequent-flier programs make it difficult to lure business travelers away from an incumbent carrier with which they may have already accrued a substantial account balance. And if the incumbent has already established preferred-provider relationships with most of the travel agents around the hub, the new entrant faces an additional competitive disadvantage. Thus, during the months in which a competitor first takes on a major carrier at its hub, the competitor must offer substantial levels of service, which at a minimum include dozens of flights a day. It must also lure frequent fliers away from an incumbent that offers them more opportunities to earn mileage and somehow win over travel agents who have preferredcarrier relationships with the incumbent.

One alternative that the newer carriers have attempted is to focus on another airport serving the same city—for example, serving Chicago's in-town airport (Midway) instead of O'Hare. These airports have considerably lower traffic volumes than the major airports that serve those communities, but they have allowed new entrants to develop niche markets.

Airport terminal capacity can also be a barrier to entry for new and existing carriers seeking to enter new markets. Entering a market requires the ability to lease or develop gates, baggage handling and airport maintenance facilities, and ticketing and passenger waiting areas. Little underused gate capacity and related terminal space is available at major airports in the short term. Over the longer term, it is possible for carriers to enter many markets, but the experience of recent years indicates that such entry is neither easy nor inexpensive.

Airport operators believe that existing capacity limits are exacerbated at many airports because the incumbent airlines, holding long-term leases with majority-in-interest (MII) clauses or exclusive-use agreements, are able to block airport expansions that would provide more capacity for new entrants. In addition, many airport-airline leases contain clauses that prohibit the airport from charging "additional rates, fees, and charges" and from changing its method of calculating landing fees. The airlines can block expansions with these provisions, but only those that would increase their costs without their consent.

Another barrier to entry has become the dominated hubs. As carriers build the connection banks required to make a hub work, their presence in the local market can become so pervasive as to approach being a monopoly. Airlines use hubs to shield some of their output from competition. As more flights are connected to a hub, the number of passengers available to support additional flights grows. Making the connecting banks work for these flights requires many gates because of the desire to minimize the delay between connections. Also, higher-yield originating passengers help provide the numbers needed to support frequent hub service. Because few airports have excess capacity in the short run (and few have enough local traffic to support more than one extensive network of nonstop service), hubs tend to become dominated by one or two major carriers who use up the existing capacity.

Finally, during the 1980s, many new entrants were able to begin operations with used or leased aircraft. Many of the older, noisier, Stage 2 aircraft that are in operation today had to meet higher Stage 3 noise criteria by 1999. The new restrictions reduced the supply of aircraft and required carriers to retrofit or re-engine existing Stage 2 aircraft. Hushkits and re-engine programs were developed for some aircraft. The cost and availability of conversion programs for some of the major aircraft of the fleet were high. In any event, the phaseout of Stage 2 aircraft has increased the cost of entry to the airline industry by reducing the supply of used aircraft and increasing the cost of operating used aircraft.

Economies of Scale

Like all oligopolists, airlines must achieve a large volume of output in order to lower the cost per unit of output (which equals a seat departure). To achieve economies of scale in production, the carriers, like other oligopolists, utilize the principle of labor specialization. Because of the number of workers, jobs can be divided and subdivided. Instead of performing five or six distinct operations in the production process, each worker may have only one task to perform. Workers can be used full-time on the particular operations for which they have special skills. Union rules about what specific workers can and cannot do also reinforce this principle. Thus, a skilled machinist with a major carrier might spend an entire career in a particular shop working on one component of the aircraft.

In a small firm, skilled machinists may spend half their time performing unskilled tasks. This makes for higher production costs. Furthermore, the division of work operations that large-scale operations permit gives workers the opportunity to become very proficient at the specific tasks assigned them. The jack-of-all-trades who is burdened with five or six jobs likely will not become very efficient at any of them. When allowed to concentrate on one task, the same worker may become highly efficient. Finally, greater specialization tends to eliminate the loss of time that accompanies the shifting of workers from one job to another.

Large-scale output also permits better utilization of and greater specialization in management. A supervisor who is capable of handling 15 or 20 employees will be underutilized in a small firm with only 8 or 10 workers. The number of volume-related workers, such as pilots, flight attendants, mechanics, and reservations personnel, can be doubled with little or no increase in administrative costs. In addition, small firms cannot use management specialists to the best advantage. In small firms, sales specialists may be forced to divide their time between several executive functions—for example, market research, sales planning, budgeting, and personnel administration. A larger scale of operations means that the marketing expert can work full-time supervising sales while appropriate specialists are added as needed to perform other managerial functions. Greater efficiency and lower unit costs are the net result.

If the volume of output must be reduced because of a falloff in traffic, something has to give, or else the firm will experience what economists refer to as **diseconomy of scale**, in which cost per unit begins to rise. In such a case, airlines are forced to furlough volume-related workers as well as administrative personnel. The remaining administrative workers must broaden their responsibilities by taking on new job assignments. Airlines have also attempted to get their volume (mostly unionized) personnel to take on greater responsibilities, but this has been more difficult. The unions question what will happen when increased traffic volumes return and whether workers will still be required to handle work outside their bargained job description.

The established carriers can utilize the latest technology available, which also brings about economies of scale. Small firms often are unable to utilize the most efficient and productive equipment. In many cases, the most efficient equipment is available only in very large and extremely expensive units. Furthermore, effective utilization of this equipment demands a high volume of output. This means that only larger carriers can afford and operate efficiently the best available equipment. Computerized reservation systems (CRSs) that display airline schedules and prices for travel agents and reservation clerks are an example. CRSs are potent marketing tools, because approximately 70 percent of all reservations made by U.S. travel agents are made through these systems. Most CRSs are owned and operated by the world's major airlines. CRSs have been expanded to make other types of reservations, such as hotel and rental cars. Fees from sales made via the systems are sources of substantial revenue and profits for their owners.

CRSs display considerable economies of scale because of the sheer scale of investment required to compete and the advantage that an airline that owns a CRS has over a nonairline investor interested in developing a CRS. The carriers that developed CRSs have spent hundreds of millions of dollars over many years to bring their systems to their current advanced state (the substantial profits being earned suggest that these investments have been recouped). The incremental revenues CRSs earn are apparently sufficient to allow the carriers to lease such systems to travel agents below cost. Therefore, a potential competitor that is not also an airline would have to develop a system more efficient than those already in use in order to attract travel agents and would have to be able to support the system without generating incremental airline revenues. Given the high cost of system development, the efficiency and economies of scale of the largest systems, and the contribution made by incremental airline revenues, such new competition appears unlikely.

Historically, most airline passengers made trip reservations through travel agents, resulting in fairly high commissions being paid to the travel agent by the airline. Over time, commissions paid have been lowered as airlines realize the high costs of using a middleperson in the transaction. Since the late 1990s and early 2000s, airlines have focused on direct selling methods and have decreased the need for the travel agent. Direct selling includes use of the Internet and direct telephone lines to the airline. Direct telephone lines are still costly to use because of high labor and infrastructure costs. However, this is preferred over the travel agent because no commissions are paid. In terms of Internet sales, airlines often advertise on their own Web site for direct bookings, or tickets can

be purchased through other on-line sources—for example, travelocity.com, priceline.com, cheaptickets.com, orbit8.com, expedia.com, sidestep.com or hotwire.com. Some sites offer detailed itineraries, including price, before making a purchase, whereas other sites act as auction houses and no prices are advertised. The customer simply bids a particular price and if accepted by the on-line system, a credit card is charged and the ticket is issued. Direct selling is the preferred method of sale by the airline because costs are reduced for the organization and savings are passed on to the passenger. In the United States, Continental Airlines sells the majority of its tickets on-line and in the United Kingdom, EasyJet sells close to 100 percent of its tickets on-line.

The major carriers are also in a better position to utilize by-products of their industry than are small firms. Selling prepackaged frozen foods prepared in the company's flight kitchens to a restaurant chain and selling computer services to smaller firms are examples of by-products that lower unit costs. Other examples include contract maintenance and the use of flight simulator time during off-peak periods for greater utilization of equipment and labor, which, in turn, lowers cost per unit.

Growth Through Merger

Another clear characteristic of oligopolists in general, and airlines in particular, is growth through merger. It is a major factor in explaining the small number of firms. The motivations for mergers are diverse. Of immediate relevance is the fact that combining two or more formerly competing firms by merger can increase their market share substantially and enable the new and larger company to achieve greater economies of scale. Another significant motive underlying the urge to merge is the market power that may accompany a merger. A firm that is larger, both absolutely and relative to the market, may have greater ability to control the market for and the price of its service than does a smaller, more competitive producer. Furthermore, the larger firm may gain leverage as a big purchaser by being able to demand and obtain lower prices (costs) in buying goods and services.

Before deregulation, mergers permitted air carriers to purchase wholesale the entire route structure of another carrier instead of applying for one route at a time through lengthy CAB proceedings. Other reasons for merger include eliminating the possibility of bankruptcy in the case of one of the carriers and eliminating competition on certain route segments. Finally, mergers permit carriers to reduce seasonality problems where one carrier's routes complement the other's.

In 1950, the certificated trunk airlines of the United States were as follows:

American Airlines	Continental Airlines
Braniff International	Delta Air Lines
Capital Airlines	Eastern Airlines
Chicago and Southern Air Lines	Inland Airlines
Colonial Airlines	Mid-Continent Airlines
National Airlines	Trans World Airlines
Northeast Airlines	United Airlines
Northwest Airlines	Western Airlines
Pan American World Airways	

By 1960, Mid-Continent had been absorbed by Braniff, which filed for bankruptcy in 1982 after overexpanding in the immediate postderegulation period. Chicago and Southern became a part of Delta; Colonial was absorbed into Eastern; and Inland became a part of Western. In 1962, Capital was taken over by United, and by 1972, Northeast was part of Delta. In 1980, National was acquired by Pan Am after a fierce stock battle with Eastern and Texas International. Using its profits from the sale of National stock, Texas International began buying blocks of stock in Continental in 1979 and eventually won control of that airline in 1981. In 1985, People Express acquired Frontier Airlines for \$300 million, and a year later People was absorbed by the newly formed Texas Air for the same price. In 1986, Texas Air acquired New York Air, another newcomer since deregulation, and then pulled off its biggest coup, the acquisition of Eastern.

United purchased Pan Am's Pacific division in 1985, and American acquired Air Cal. Merger activity intensified in 1986 when Northwest acquired Republic for \$884 million. Republic, a carrier that became a major after deregulation, was the result of a merger of three successful former local-service carriers: Hughes Airwest, North Central Airlines, and Southern Airways. Hughes Airwest had been the result of a merger of four former carriers in the 1960s—Bonanza Airlines, Southwest Airways, Pacific Airlines, and West Coast Airlines. Also in 1986, Trans World acquired Ozark for \$250 million, and the merger of Delta and Western combined the nation's sixth- and ninth-largest airlines into one of the remaining mega-carriers. USAir (formerly Allegheny) acquired Pacific Southwest early in 1987 and finally won approval from the DOT for the acquisition of Piedmont in October 1987.

In 1991, Eastern finally folded its wings after operating under bankruptcy for close to two years. Midway ceased operations in early 1992. And after struggling for many years, Pan Am finally went out of business that same year. In 1991, it had sold its transatlantic routes to London and beyond to United for \$400 million, and finally, in 1992, it sold its Latin American routes to United. In 2002, American Airlines acquired TWA. In late 2005, America West and US Airways merged but continue to operate under separate names. As of year-end 2004, the top U.S. airlines were as shown in Table 6.1.

The Airline Deregulation Act of 1978 required the CAB to treat airline mergers and acquisitions in a manner more consistent with the antitrust standards applied to almost all other industries. According to the provisions of the act, application of the Sherman Antitrust Act test would be used to prohibit mergers that would result in a monopoly in any region of the country. Application of the Clayton Antitrust Act test would be used to prohibit transactions that would have the effect of substantially lessening competition or that would tend to create a monopoly. The Airline Deregulation Act, however, did give the CAB (and later the DOT) somewhat more latitude in weighing the benefits of mergers (transportation convenience and needs) than is applied in antitrust cases in other industries.

In the first few years after passage of the Airline Deregulation Act, before the CAB was dissolved and its antitrust authority shifted to the DOT, several mergers were permitted that were "end-to-end" in character. These mergers involved carriers that did not serve overlapping markets, and some of the mergers actually enhanced service by reducing transaction costs, apparently without reducing competition. For example, Pan American was allowed to merge with National. Several proposed mergers were disapproved because the carriers' routes were "parallel mergers"; that is, the carriers served too many overlapping routes (Eastern–National). Several others were disapproved because of concern about hub dominance and barriers to entry (Continental–Western).

Revenue Passengers Enplaned ¹ (thousands)		Revenue Passenger Miles ¹ (millions)		Available Seat Miles ¹ (millions)		Cargo Revenue Ton Miles ² (millions)	
1 American	91,570	1 American	130,020	1 American	173,823	1 FedEx	9,991
2 Delta	86,755	2 United	114,536	2 United	144,547	2 Atlas/Polar	5,428
3 Southwest	81,066	3 Delta	98,041	3 Delta	129,463	3 UPS	5,309
4 United	70,786	4 Northwest	73,294	4 Northwest	91,357	4 Northwest	2,338
5 Northwest	55,373	5 Continental	63,176	5 Continental	81,226	5 American	2,211
6 US Airways	42,400	6 Southwest	53,415	6 Southwest	76,863	6 United	1,995
7 Continental	40,551	7 US Airways	40,498	7 US Airways	53,982	7 Delta	1,425
8 America West	21,119	8 America West	23,318	8 America West	30,133	8 Kalitta	1,171
9 Alaska	16,280	9 Alaska	16,224	9 Alaska	22,263	9 Continental	974
10 American Eagle	14,869	10 JetBlue	15,721	10 JetBlue	18,992	10 Gemini	763
11 ExpressJet	13,659	11 ATA	12,539	11 ATA	17,148	11 ABX	713
12 SkyWest	13,417	12 AirTran	8,479	12 AirTran	11,996	12 Evergreen Int'l	501
13 AirTran	13,170	13 ExpressJet	7,417	13 ExpressJet	10,409	13 ASTAR	401
14 Comair	12,632	14 Comair	6,268	14 Comair	9,249	14 World	397
15 JetBlue	11,731	15 Frontier	6,285	15 Frontier	8,548	15 US Airways	338
16 Atlantic Southeast	10,420	16 Hawaiian	6,141	16 American Eagle	8,486	16 Southern	315
17 ATA	10,024	17 American Eagle	5,817	17 SkyWest	7,547	17 Omni	259
18 Mesa	9,122	18 SkyWest	5,550	18 Hawaiian	7,128	18 Tradewinds	245
19 Independence	7,041	19 Spirit	4,887	19 Atlantic Southeast	6,899	19 Air Transport Int'l	224
20 Air Wisconsin	6,954	20 Atlantic Southeast	4,766	20 Mesa	6,364	20 Express.Net	213
21 Frontier	6,406	21 Mesa	4,589	21 Spirit	6,280	21 Southwest	184
22 Pinnacle	6,362	22 Pinnacle	2,910	22 Independence	4,375	22 Florida West	157
23 Horizon	5,930	23 Air Wisconsin	2,813	23 Pinnacle	4,216	23 Kitty Hawk	143
24 Hawaiian	5,585	24 Independence	2,661	24 Air Wisconsin	3,742	24 Amerijet Int'l	102
25 Mesaba	5,427	25 Continental Micronesia	2,569	25 Midwest	3,540	25 Hawaiian	86

TABLE 6-1 U.S. Airlines – 2004

¹Scheduled services only

²All services

Bold = Member. Air Transport Association of America, Inc. (ATA)

Source: Air Transport Association of America, Annual Report, 2005. Available at: http://www.airlines.org/files/2005AnnualReport.pdf

When the DOT was given authority over mergers in 1985, the number of mergers and acquisitions increased from 8 between 1980 and 1984 to 18 in 1985 and to 25 in 1986. Most of these mergers did not raise significant competitive issues; many of the small carriers involved in them were in financial difficulty and would have gone bankrupt had they not merged. Some end-to-end mergers may even have facilitated competition, because the combination of two carriers serving different markets helped build a broader, more competitive network.

Because of the complexity of airline networks and competition, it is difficult to specify in advance the conditions under which mergers or acquisitions will be anticompetitive. Some mergers, for example, may facilitate competition between hub networks but simultaneously create opportunities for hub dominance. An overriding question concerns the total number of major carriers that are required to maintain an adequate level of competition. Although the number of firms required to ensure adequate competition necessarily involves some speculation, the main criterion for the adequacy of competition nationwide is the level of competition for passenger flows between competing hub systems. Consumers receive

the largest benefits when three or more competitors are operating in the same market, especially if one of the competitors is a new-entrant airline with a low-price marketing strategy.

Having only three carriers nationwide would probably not be adequate to ensure this level of competition. Sufficient barriers to entry exist to prevent three major carriers from being able to compete with one another for hub traffic from every major spoke city. Five or six major airlines, however, would probably constitute a sufficient number of hub systems to ensure the presence of three or more competitors in most major spoke markets, especially when several additional healthy regional and national carriers are offering consumers alternatives in specific regional or niche markets. Five or six nationwide firms that compete with one another at all the large commercial airports may provide much stronger competitive pressure to hold down costs and fares than would 10 or 15 carriers competing in less extensive networks. The fewer the number of firms, however, the easier it is for them to form and enforce a tight oligopoly in which industry output is lower and fares are higher than would be the case in a competitive market. For fewer than five or six carriers, the results would depend on the circumstances of the carriers, their markets, and the vigor of the competition among them in the future. But as already indicated, three major nationwide carriers are likely to be too few to ensure adequate competition.

Mutual Dependence

Regardless of the means by which an oligopoly evolves, rivalry among a small number of firms clearly interjects a new and complicating characteristic: mutual dependence. Imagine that three carriers -A, B, and C-serve the same route and that each has about one-third of the market. If A cuts its price, its share of the market will increase, but B and C will be directly, immediately, and adversely affected by A's price-cutting. Thus, we can expect some reaction on the part of B and C to A's behavior: B and C may match A's price cut or even undercut A, thereby starting a price war. This response suggests that no firm in an oligopolistic industry will dare to alter its price policies without attempting to calculate the most likely reaction of its rivals. This is consistent with economic theory and characteristic of pricing at concentrated gate- and slot-constrained airports where two or three competitors hold the majority market share. However, not enough oligopoly pricing exists to cover the industry's fixed costs and offset steep discounting in competitive markets. Today, the airline industry sets prices in a highly irrational way. We see evidence of oligopoly and destructive competition side by side. Since deregulation, the full unrestricted Y fare—or basic or standard fare—has almost doubled. With the full fare rising so sharply, relatively few passengers would pay it. Consequently, today, over 90 percent of passengers pay an average of only about 30 percent of the full fare. Only those individuals who absolutely must fly on short notice have to pay full fare.

Discounted fares are targeted at discretionary (vacation) travelers. To dissuade business travelers from using them, they ordinarily come saddled with restrictions nonrefundability, advance purchase requirements, and Saturday night stay-over obligations. However, large corporations and units of the federal government can negotiate a contract rate with airlines that includes the discounted fares but is largely devoid of restrictions.

The intense price competition that characterizes many routes is complicated by the fact that different carriers often attach varying importance to the same route. In many circumstances, a particular route represents an important part of a carrier's network,

produces fully allocated profits, and is regarded as part of that carrier's core business. For a second carrier not currently serving that route, on the other hand, it represents an incremental opportunity.

Needing only to recover the marginal costs of adding service with equipment it already has, but adding a service that may be surplus to its needs, the second carrier may choose to facilitate its entry to the route by pricing its services at or just above marginal cost. In this situation, the second carrier will benefit from filling lots of empty seats and contributing, in at least a small way, to covering its fixed costs.

The first carrier, compelled to match the newcomer's price, will suffer significant yield erosion and will be unable to meet its objective of full cost recovery. The new carrier will benefit, but overall, the industry (Carrier A + Carrier B) will move from profit to loss.

The pricing decisions of individual carriers usually make economic sense from the carrier's perspective. But for the industry as a whole, these decisions contribute to the continual price erosion that has restricted the ability of all carriers to increase revenues to keep up with rising costs.

Price Rigidity and Nonprice Competition

Firms in oligopolistic industries are much more comfortable maintaining constant prices than rocking the boat, so to speak, because of mutual dependence and fear of a price war. The tendency has been to fight it out in the nonprice arena, using advertising and increased customer services as the major weapons. This situation prevailed in the airline industry before 1978. At that time, however, the door was opened to new competition, and the airline price wars began.

Under the old regulatory framework, the price of an airline seat was directly related to the cost of producing it. Prices were simply based on costs, allowing for a given rate of return. Carriers were expected to use the resulting profits to cross-subsidize required service on shorter-haul, lower-density routes (on which fares were often held below prevailing costs). Everyone knew the rules and was comfortable with them. The impact of economic recession was blunted by the CAB, which rescued the occasional casualty with repeated doses of fare increases. After the Airline Deregulation Act of 1978, however, things changed, and airline pricing became more complicated.

In theory, the removal of route restrictions after deregulation was supposed to stimulate the entry of new firms into the airline industry and cause existing airlines to expand or shift their operations into other, more profitable markets, thereby forcing fares down and expanding service options in markets in which carriers had previously enjoyed little competition. Indeed, as predicted by theory, most established carriers greatly expanded their networks shortly after deregulation, and many new firms entered the marketplace, creating a competitive environment that produced much lower fares during the mid-1980s. Since 1987, however, virtually all these new entrants have either failed or merged with larger incumbent carriers, while passenger fares have risen.

During the early 1990s, American Airlines tried on several occasions to introduce some sensibility into the fare structure by proposing a simple, four-tiered "value pricing" system that tied fares to distance flown and that more adequately related fares to costs. United and Delta were prepared to emulate the system, but others—like Continental, TWA, and America West, which were going through bankruptcy and facing huge losses—were more interested in cutting fares to generate cash flow.

Given the recessionary economy in the early 1990s and slow industry growth through the late 1990s and early 2000s, it has become apparent that prices will not stabilize for several years. Some analysts believe that the industry still must experience a further shakeout, with the elimination of several more of the weaker carriers, before true oligopolistic pricing becomes the norm. At that time, prices will stabilize, and the remaining carriers will rely on the traditional nonprice competition.

OTHER UNIQUE ECONOMIC CHARACTERISTICS

Government Financial Assistance

Unlike other oligopolistic industries, various government units have played major roles in financing the growth and development of the U.S. airport-airways system. The federal government has played the predominant role in this regard. Until 1970, when the Airport and Airways Development Act was passed by Congress, the national airways system was maintained by the federal government at minimal cost to users of the system. However, the act created a system of user charges that have been levied on airline passengers, shippers, general aviation, and the airlines so that the airways might be self-supporting. The 1970 act and its successor, the Airport and Airway Improvement Act of 1982, provided for continued federal funding of both airway operation and airport development. In many instances, the fees charged for landing aircraft, maintaining office and operational space, and providing maintenance and administrative quarters do not repay the operating costs of the airport. Even when the fees repay operating costs, they typically do not cover capital costs involved in airport expansion. Consequently, the airline industry has historically benefited from the financing of the major cost element of the industry — the airport-airways system — by various governmental units, which until recently levied quite limited charges on system users.

High Technological Turnover

As of 2005, the U.S. scheduled airlines had total assets of approximately \$100 billion, of which approximately \$60 billion was flight equipment. No other oligopolistic industry has such highly mobile assets that represent close to 60 percent of its total assets. Furthermore, technological advances in flight equipment over the short span of 35 years have come at an extremely rapid pace.

Before World War II, the capital requirements of most commercial airlines were modest and were met largely through internal sources, notably profits. The scale of the industry increased, however, and by the mid-1950s, the industry had turned its attention to planning for jet aircraft. The carriers committed almost \$2 billion for flight equipment and the associated ground equipment. The first jet aircraft arrived in the late 1950s, and by the mid-1960s, the stretched-version Boeing 727s and 720s were arriving on the scene to accommodate the increased traffic, which required a whole new refinancing cycle. By the mid to late 1960s, plans were being made to purchase larger, wide-body equipment. Between 1966 and 1971, the industry placed orders amounting to \$10 billion. The 1970s witnessed dramatic rises in fuel prices, and all attention was focused on developing fuel-efficient aircraft for the 1980s and 1990s. By 1986, industry capital requirements from external sources reached \$7 billion. The ATA forecast capital requirements of approximately \$65 billion for the industry during the 10-year period between 1996 and 2005.

Airlines have led all other industries in the rate of increase in capital spending over the past three decades. Technological advances and competition have forced the carriers to undertake a re-equipment cycle on an average of every eight years. Besides calling for huge amounts of capital spending, these cycles mean heavy expenses in hiring and training personnel and in modifying facilities to accommodate the new aircraft and associated equipment.

High Labor and Fuel Expenses

Because an airline's costs define the limit of how low it can profitably price its service, and because most airline customers value low prices above all other carrier selection factors, the carrier with the lowest costs has a powerful competitive advantage. The fact that most carriers have a difficult time differentiating their products from those of their competition makes this especially true. Thus, cutting costs to the lowest possible level has become a key strategic necessity in today's airline industry.

Unfortunately, reducing costs is easier said than done. In addition to a carrier's high fixed costs, many of the so-called variable costs, if not completely out of the airline's control, are very difficult to manage. Two of the biggest are labor and fuel expenses.

Airline employees are men and women with highly developed skills and with correspondingly high incomes. In 2004, the industry employed 569,084 people, and the average wage exceeded \$55,663 (\$77,561 total compensation), which far outpaces all other industries in the United States.

The high level of unionization in the airline industry, particularly among the more established carriers, also reduces the extent to which labor costs can truly be considered variable. Labor typically represents the largest cost advantage start-up airlines have over more established carriers. Moreover, despite ts reliance on high technology, the business is very labor intensive. New entrants often outsource many functions to service providers that pay their employees minimum market rates and provide few, if any, benefits. Because these providers draw from a large pool of experienced workers trained by carriers that have failed, new entrants often offer service that is qualitatively indistinguishable from that offered by long-established carriers.

In contrast, the older carriers operate under the terms of union contracts that prevent them from making changes to match the costs of new entrants. These contracts typically include extraordinarily complex work rules that sharply reduce the carriers' ability to improve labor productivity. Moreover, the work force of the traditional carrier typically is much older than that of a start-up airline, creating an even greater disparity in wage rates, as a 10- or 20-year airline veteran will invariably have achieved a far higher wage than his or her counterpart at a start-up carrier.

No other industry has been subjected to the severe increases in fuel prices that the air carriers have experienced over the past 15 years. Between 1978 and 1981, the price of jet fuel increased by over 153 percent, rising to a peak in May 1981 of \$1.052 per gallon in domestic markets and \$1.168 in international markets. The trend in jet fuel prices was generally downward for the remainder of the decade. However, in 1990, starting with the heating oil crisis that raised the price of jet fuel by a third, prices soared. Stimulated by the Iraqi invasion of Kuwait, jet fuel, which had sold for as low as 60 cents per gallon, moved very quickly to more than \$1.10 per gallon. Although there was no shortage in fuel, prices were driven up in a speculative panic. As of early 2006, the airlines continue to be hit with increased costs with fuel being a major contributor. Industry cost expenses increased

10.7 percent in 2005 over the year prior to \$132.9 billion. Crude oil prices (per barrel) increased from an average of \$26 in 2002 to \$41.40 in 2004 while jet fuel climbed from \$0.71 per gallon in 2002 to \$1.15 per gallon in 2004. In August 2005, crude oil hit a record high of \$69.91 per barrel and jet fuel hit a high of \$1.87 per gallon as a result of Hurricane Katrina hitting the Gulf Coast region of the United States where much of the country's oil and fuel supplies are stored. Fuel prices are heavily influenced by a variety of local and global factors correlated with the price of crude oil. Influencing factors include the global economy, increasing supply tightness, geopolitical insecurity (i.e., the on-going Iraqi crisis), unique production and demand factors, and acts of God. It is estimated that every 1-cent-per-gallon increase costs the industry approximately \$160 million.

Although an airline can maximize its efficiency by purchasing aircraft that burn less fuel than others, fuel-efficient airplanes often have much higher capital costs than do less fuel-efficient aircraft. Moreover, the actual price of fuel is contingent on factors far outside any airline's span of control. Thus, fuel costs are only marginally manageable.

Labor and fuel costs typically represent around 60 percent of a carrier's operating expenses.

The Competitive Advantage of Schedule Frequency

The effect of a slight change in departure time on passenger buying behavior creates a powerful incentive for carriers to increase flight frequency, even when there are plenty of seats available on existing flights.

Moreover, when one carrier enjoys a schedule frequency advantage over another on a particular route, the competitive value of that advantage is more than proportional. For example, if Carrier A has six daily flights between two points and Carrier B has only three, the relative strength of Carrier A versus Carrier B is greater than two to one. The reason for this is that Carrier A's customers—in addition to having two times as many chances to match a flight to their needs—will perceive the more frequent service as offering them more flexibility to change their plans at the last minute.

Because airline hub-and-spoke systems provide the most convenient service between the greatest number of cities, most U.S. carriers operate domestic route networks focused around one or more hubs. The fact that customers see the airlines' product, a seat on an airplane, as a relatively undifferentiated product notwithstanding, each time a networkbased airline offers a new flight, it commits an additional city to all the others served by the hub, and thus introduces a number of new products. Additionally, by widening the reach of its network, it strengthens its entire existing product line.

When origin-departure city-pairs, time of departure, airport used, and type of service (nonstop versus connecting) combinations are considered, an airline can schedule its resources to offer an enormous range of "products," each with different revenuegenerating potential and different costs. Furthermore, once airplanes and facilities are in place, the economics of offering additional capacity are often evaluated on the basis of marginal cost, which is very low as a percentage of total cost.

In most industries, increased production, by itself, does not enhance an individual competitor's sales potential or competitive position. However, in the airline industry, the fact that more capacity represents more schedule frequency, and thus a more desirable product, gives every airline an incentive to use every airplane as intensively as possible. Although this strategy makes sense for each individual carrier, it results in a tendency toward perpetual overcapacity.

Excess Capacity and Low Marginal Costs

The airline industry historically has tended both to produce excess capacity and to price its product below fully allocated costs. The demand of consumers for schedule frequency produces tremendous excess capacity with no shelf life, pushing costs up. The demand of consumers for low prices and the perception that air transportation is virtually an undifferentiated commodity drive prices down to levels that, too often, fail to cover fully allocated costs.

Airlines inevitably produce excessive capacity. Whether regulated or deregulated, from the mid-1950s to the present, U.S. airlines have almost never achieved an average annual load factor exceeding 67 percent (and in most years, load factors were substantially worse than that). In effect, this means that at least one-third of available inventory remains unsold.

On this point, economist Melvin Brenner notes:

The industry has always had excess capacity, even during boom times. Over-capacity results from: (a) the competitive importance of schedule frequency. Since schedule convenience is one of the most important differentiating characteristics of the airline product, all airlines strive for high scheduled frequency on every important route, and (b) the fact that airlines have very high fixed costs and are therefore incentivized to fly their aircraft as much as possible, even if incremental flying does not produce enough revenue to cover fully allocated costs. Whenever a flight covers variable costs and contributes to overhead, the individual carrier is better off flying rather than not flying. However, the cumulation of the many marginally-justified schedules creates over-capacity for the industry as a whole.¹

Moreover, that capacity has no shelf life. Once a scheduled flight pulls away from the gate, any empty seats are lost forever. Seeking to sell as much of that perishable inventory as possible, carriers offer the same fares as the lowest-price provider in an effort to grasp an ascending and, too often, elusive break-even load factor and preserve market share.

Excess capacity coupled with perishable inventory leads to marginal cost pricing. The marginal cost of serving one additional customer on a given flight is very low, consisting only of the cost of food, sales commission, incremental fuel burn, and other minor expenses. In general, the marginal cost of an additional passenger is less than one-fourth of the fully allocated costs. But industry costs are disproportionately fixed, with fixed costs accounting for between 80 and 90 percent of total costs. In the high-fixed-cost, price-sensitive airline business, excess capacity has a devastating effect because it motivates carriers to fill aircraft by cutting prices. Other carriers are forced to match, and fare wars erupt. Although a ticket sold below fully allocated costs is unprofitable, any ticket sold at a price above variable costs. An empty seat, naturally, makes no such contribution.

Airlines also suffer from the problem that most of their costs are joint costs, spread over an array of functions related to moving passengers and freight throughout their networks. Thus, actual costs are obscured and difficult to ascribe to particular passengers.

In the long run, carriers must recover their fixed costs or face bankruptcy (as scores of airlines have learned). But collectively irrational behavior, such as was exhibited by airlines before regulation in 1938 and after deregulation in 1978, causes costs and prices

¹Melvin Brenner, "Program for Improving Airline Outlook" (unpublished monograph), 1993.

to fail to achieve equilibrium at a level that covers fully allocated costs and allows an adequate profit.

Sensitivity to Economic Fluctuations

The susceptibility of air transportation demand to the business cycle was underlined by the recession of the early 1990s. Revenue passenger miles and cargo ton-miles declined, and losses soared to record levels.

Although the impact of a recession is not unique to the airline industry, what is different is the fact that as a service industry (unlike durable goods such as automobiles), it is much slower to recover because spending on air travel is discretionary. People have to be working again and the economy has to be well on the way to recovery before spending on air travel starts to pick up momentum. This can take anywhere from 12 to 18 months after the recovery is well under way.

The effects of a recession on air travel are obvious. Both pleasure and business travel are curtailed during periods of sharp and sustained downturn in the general economy. In a recession, people tend to postpone long-distance travel to save not only on airfares but also on the expenses associated with the trip. Companies tend to cut back on business trips or on the number of people sent on a given trip. Travel is one of the expenses a business can cut immediately during tough economic times. Fewer people travel first class, so that the dollar yields realized are reduced.

The impact of a recession on the airlines is intensified by the high rate of traffic growth they experience during periods of prosperity. When the economy moves into a recessionary period, the carriers find themselves with substantial excess capacity. Unlike manufacturing industries, they cannot inventory goods or cut back production until the economy improves. Interest payments to creditors on outstanding debts (primarily flight equipment) must be paid, and facilities that were geared to handle a prerecession volume cannot be closed. Although airlines can furlough certain volume-related employees, they must carefully consider this move because of the extensive retraining costs involved when personnel are brought back as volumes increase.

Close Government Regulation

The close relationship between the airlines and the various units of the federal government was discussed in Chapter 3. Unlike other oligopolistic industries, but like other transportation modes, the airlines have a long history of both support and regulation by government. The FAA regulates most aspects of airline operations that relate to safety and navigation, as well as to environmental conditions. The National Transportation Safety Board investigates all air carrier accidents and makes recommendations to the FAA. Other federal agencies, including the Department of Transportation, Department of Commerce, U.S. Postal Service, U.S. Customs Service, U.S. Citizenship and Immigration Service, and Department of Justice, regulate less obvious aspects of airline operations and have extensive interaction with the industry. State aviation agencies, local airport authorities, and other branches of local government regulate airline operations in terms of their effect on local airports and airport environs.

THE SIGNIFICANCE OF AIRLINE PASSENGER LOAD FACTORS

One of the most vital statistics in the airline business is load factor. Given the multimilliondollar investment represented by the modern jetliner, airlines are naturally concerned with equipment utilization. One measure of utilization is the revenue passenger **load factor**. This figure expresses the relationship between available seat-miles and revenue passenger miles realized.

Load factor has a critical impact on the cost and quality of air transportation services offered. Approximately 65 percent of an airline's costs are directly related to the operation of aircraft and are independent of the number of passengers on the aircraft. Therefore, a high load factor will allow the allocation of these costs over a large number of passengers, resulting in lower costs per passenger, which allows for lower fares.

Table 6-2 shows the average load factor figures for the U.S. scheduled airlines between 1970 and 2004. Load factors fluctuated between 48.5 and 75.5 percent during that period. The relatively low load factors for 1970 and 1971 reflect the recession and the simultaneous delivery of larger-capacity equipment. The higher load factors of the early 1980s were influenced by traffic growth and capacity limitation agreements, which the CAB permitted in some long-distance markets that were served by several carriers. These capacity reductions, and those triggered by the energy crisis, led to significant increases in carrier load factors in those markets. The CAB, at least temporarily, considered such agreements to be a useful regulatory tool. However, the Justice Department and other

Prederegulation			Postderegulation		
Year	Average Load Factor (%)	Year	Average Load Factor (%)	Year	Average Load Factor (%)
1970	49.7	1979	63.0	1990	62.4
1971	48.5	1980	59.0	1991	62.6
1972	53.0	1981	58.6	1992	63.6
1973	52.1	1982	59.0	1993	63.5
1974	54.9	1983	60.7	1994	66.2
1975	53.7	1984	59.2	1995	67.0
1976	55.4	1985	61.4	1996	69.3
1977	55.9	1986	60.4	1997	70.3
1978	61.5	1987	62.3	1998	70.7
		1988	62.5	1999	71.0
		1989	63.2	2000	72.4
				2001	70.0
				2002	71.6
				2003	73.4
				2004	75.5

TABLE 6-2 Revenue Passenger Load Factor for U.S. Scheduled Airlines, 1970– 2004

Source: Air Transport Association Annual Reports.

critics charged that such agreements had a negative competitive impact. As a result of the air traffic controllers' strike of 1981, capacity restrictions were imposed by the FAA on the air carriers at 22 major hub airports. The FAA gradually relaxed airport landing slots over the next two years, and their ultimate removal occurred at the end of 1983. However, four airports are still under FAA slot control because of traffic density. Load factors stabilized after the fierce competition of the mid to late 1980s. Available seat-miles decreased significantly in 1991, which held load factors up during the early 1990s. As the economy expanded during the mid-1990s, traffic demand grew faster than capacity, causing load factors to rise sharply.

Traffic Peaks and Valleys

All transportation modes must operate during traffic peaks and valleys in order to meet the public need. Buses and commuter trains in every major city are full in one direction during rush hours and virtually empty on the return trip. At midday, in the early morning and late evening, and on weekends, passenger loads are also light. That's the nature of public transportation, whether buses, trains, or planes.

Airline load factors during any one year vary from month to month depending on the season. Daily and hourly load factors fluctuate even more. Averages for the peak day of the peak month might be 75 percent, and for the peak hour 80 percent; many flights in these hours are at or near 100 percent capacity. Furthermore, a nationwide transportation network requires that some flights with light patronage be operated to position aircraft for other flights with higher loads. Flights to Florida in November and December are booked solid, while load factors on flights north are much lower. Flights from Los Angeles to Las Vegas on Friday nights are full and flights back to Los Angeles on Sunday nights are full, but the planes cannot sit idle over the weekend in Las Vegas. They must be used for other service and thus must fly from Las Vegas with little or no traffic and return for the next high-load flight back to Los Angeles on Sunday night. And so it goes for other city-pairs throughout the nation.

Sometimes, aircraft must be flown virtually empty from one city to another late at night or early in the morning to have the plane ready to meet rush-hour demand. These **positioning flights** certainly affect the average load factor figure used to describe air transportation productivity.

Figure 6-1 shows an example of two days out of a summer's Boeing 757 routing pattern. Based on these two days, the carrier had an average load factor of 60 percent. Eight of the 15 flight segments had a load factor of 75 percent or more, and the carrier was forced to turn some passengers away. Three segments averaged about 50 percent, and the remaining four had load factors ranging between 15 and 45 percent.

Capacity Versus Demand

Demand for air transport services has always been highly cyclical, with greater or lesser demand depending on time of day, day of week, and season, as well as on broader market fluctuations from year to year. We know, for example, that discretionary leisure traffic picks up in the summer, thereby allowing the industry to enjoy higher load factors for the third quarter.

On a macro level, when the economy is growing and consumer confidence is strong, demand grows, improving airline load factors and allowing carriers to raise yields



FIGURE 6-1 Partial Boeing 757 routing pattern (two days), summer 200X.

and profitability. When the economy falters, however, unemployment rises, consumer confidence declines, and individuals postpone discretionary travel; as a result, airline load factors, yields, and profits suffer.

The realities of public transportation, whether bus, train, or plane, result in an imbalance between the number of seats, or capacity, available and the current demand for travel by the public. The two simply do not mesh at precisely the same time, the same place, and the same rate.

Airlines cannot fine-tune capacity to match demand, because capacity can only be added or taken away in total planeloads. The aircraft unit itself is obviously inflexible; if a given carrier's 757 is equipped with 160 seats, that seat supply on a particular schedule cannot be shrunk or expanded between Thursday and Friday and then changed again for Saturday.

Within limits, the total number of flight frequencies on a given day can be varied, and this is done where feasible. On business routes, for example, it is common to reduce frequencies on Saturdays. However, a number of factors limit the ability to adjust daily seats to daily traffic.



FIGURE 6-2 Daily seats and passengers, one Miami–New York schedule (hypothetical scenario).

First, many routes have too little flight frequency maintained by each carrier to permit much leeway for canceling trips on a particular day without damaging the overall pattern. Second, the day-of-week pattern of demand does not vary in a precise, predictable, or fully consistent manner. Finally, the schedule pattern on any one route is too interrelated with those of other routes (and with operational constraints of various kinds) to permit an erratically scheduled operation from day to day. As a result of these various factors, the supply of seats is necessarily much more uniform than is the demand for them.

Figure 6-2 shows the number of seats offered each day and the passengers actually carried for a schedule on an intermediate-length segment (Miami–New York). For the month as a whole, the average load on this route was 70 passengers, which produced an average monthly load factor of 68 percent. On the other hand, the average number of empty seats per trip was 32. But as can be seen, at one extreme there were four days when there were more than 60 empty seats, and at the other extreme there were seven days when there were fewer than 15 empty seats.

In the example in Figure 6-2, although space was relatively tighter on some days than on others, on no days was this particular flight completely full. The question may arise as to why there should ever have been any need to turn any passenger away from this scheduled flight. Yet the probability is very high that passengers were indeed turned away on a number of days, even though there were some empty seats at departure time.

The explanation for this lies in the nature of the reservations process and the fact that a flight can be fully booked days or even weeks in advance and then have some of those bookings dissipate by departure time. Passengers originally holding reservations may have to change their plans at the last minute and either cancel their space too late for it to be rebooked or simply become **no-shows.** Thus, the existence of some empty seats at departure time does not eliminate the possibility that prospective passengers were turned away at some time during the booking process. The importance of this factor is indicated by the no-show rate, which at times has run as high as 20 percent.

No-shows are partly offset by **overbooking**, which reflects an attempt by airlines to factor in the mathematical probabilities of no-shows and to adjust seat inventories accordingly. A carrier cannot completely correct for this factor, however, because some allowance must be made for unexpected changes in booking patterns. Therefore, there is still the prospect of unaccommodated demand for any flight that departs with only a few seats empty.

Based on the carrier's no-show rate for a particular flight, it appears likely that flights departing with load factors of 80 percent or more have turned away some passengers. Although the cost benefit of high load factors is easily understood, we now see that there is another side to the coin—the relationship between load factor and service convenience. The higher the load factor, the greater the prospect that a passenger will find his or her desired flight already fully booked when seeking a reservation. There is, in other words, a tradeoff involved in high load factors—the benefit of lower cost per passenger versus the disadvantage of lower service convenience.

Pricing in Relation to Load Factor

One approach that carriers have used quite extensively over the years to improve load factors is **off-peak pricing.** This involves the introduction of a promotional fare designed to attract passengers during an otherwise slack period. Off-peak pricing dates back to the earliest days of the airline industry. The first coach service, for example, was an off-peak night coach.

It has always been recognized that both the public and the industry benefit if the empty seats on low-traffic days are filled with passengers who are willing to travel on those less popular days in exchange for some fare reduction. The additional passengers add very little to costs (primarily meal service), but they add a great deal to the flight's total revenue.

Off-peak pricing has not been without its problems. One problem is the fact that the timing of the peak has varied from route to route and even from one direction to the other on the same route. For example, Dallas–New Orleans might experience its peak traffic on Friday, and Chicago–Los Angeles on Sunday. As another example, the peak hour of the day westbound from New York to Los Angeles is from 5:00 to 6:00 P.M. Yet traveling eastbound on the very same route, the peak departure time is 9:00 A.M., because of the effect of time zones.

Off-peak pricing, by its nature, injects complications into the pricing structure. In contrast, some pricing developments in recent years have aimed for the simplicity of overall fare reductions, applied across the board, without restrictions. Although such overall fare reductions have the welcome effect of reducing the complexity of the fare structure, they do require higher load factors to remain viable, and they cannot themselves channel traffic to off-peak times and days to achieve optimal load factors. Therefore, this particular pricing trend brings into play the full force of high load factors on space restrictions without softening the impact of such restrictions on the normally peak times.

At this point, it is impossible to predict which pricing strategies will prove dominant in the long run. For reasons already indicated, the outcome will have an important bearing on the service-convenience aspect of future load factors.

KEY TERMS

oligopoly 1	oad factor
barriers to entry	positioning flight
economy of scale r	no-show
mutual dependence d	overbooking
diseconomy of scale of	off-peak pricing

REVIEW QUESTIONS

- 1. Why is the airline industry considered oligopolistic? What are some of the barriers to becoming a certificated carrier today? Compare the barriers today with those before deregulation. How has the number of carriers, and their market share, changed since deregulation?
- 2. Define *economies of scale*. How do they apply to the major carriers? When can economies of scale turn into diseconomies of scale? Give several examples of economies of scale in the airline industry today.
- 3. Why has there been a tendency toward mergers in oligopolistic industries over the years? What are some of the reasons air carriers have merged? What do you think the structure of the airline industry will be like in 2010?
- 4. Why are the carriers so mutually dependent? How have pricing practices changed since the prederegulation days? What was the major form of competition in the prederegulation era? Discuss some of the causes of the price wars in the 1980s. Do you foresee prices stabilizing in the next several years? Why is there a tendency in oligopolistic industries toward price rigidity and nonprice competition?
- 5. Give some examples of how government (particularly the federal government) has assisted the industry financially over the years. Why is there such a high technological turnover in the industry? When one carrier acquires new flight equipment, why do the other competing lines have to do the same?
- 6. What are the three major operating expenses of airlines? Why are they so high? How have they changed over the years? Why are labor costs such a competitive advantage for start-up airlines over more established carriers?
- 7. What is the competitive advantage of schedule frequency? How does it lead to excess capacity? Describe the effect of excess capacity on pricing.
- 8. Many industries are sensitive to fluctuations in the economy. How does the airline industry differ? How is it different to furlough employees in the airline industry versus the automobile or soft-drink industry?
- 9. Why has the airline industry been subject to greater government regulation than other oligopolistic industries?

- 10. Define *load factor*. What is the relationship between load factor and costs per unit? Explain. Why have load factors increased in recent years? Why are all public transportation modes subject to traffic peaks and valleys? How do positioning flights affect load factors?
- 11. Why can't airlines fine-tune capacity to match demand? Define *no-shows*. When load factors approach 80 percent or higher, we can expect some passengers to be turned away. Why? What is *overbooking? Off-peak pricing*?

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PART THREE

Managerial Aspects of Airlines