The Evolution of the Air Express Industry, 1973–2002

29

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Introduction

The air express industry is that segment of the broader air cargo industry that specializes in rapid (normally overnight) delivery of small packages. It is generally agreed that the air express industry in the United States began with Fred Smith's vision for Federal Express Company, which started operations in 1973. Federal Express transformed the structure of the existing air cargo industry and paved the way for rapid growth in the overnight package segment of that industry. A further impetus to the industry's development was the 1977 deregulation of the U.S. air cargo industry. This deregulation allowed Federal Express (and its emerging competitors) to buy large jets for the first time. The story of the industry during the 1980s was one of rapid growth and new entry. Between 1982 and 1989, air express cargo shipments in the United States grew at an annual average rate of 31 percent. In contrast, shipments of air freight and air mail grew at an annual rate of only 2.7 percent.[1] This rapid growth attracted new entrants such as United Parcel Service (UPS) and Airborne Freight (which operates under the name Airborne Express). The entry of UPS triggered severe price cutting, which ultimately drove some of the weaker competitors out of the market and touched off a wave of consolidation in the industry.

By the mid 1990s, the industry structure had stabilized with three firms—Federal Express, UPS, and Airborne Express—accounting for approximately 70 percent of U.S. air express shipments. (See Table 1 for a comparison of the three companies.) During the first half of the 1990s, the air express industry continued to grow at a healthy rate, with express shipments expanding from 4,404 million ton miles in 1990 to 7,042 ton miles in 1994, an annual growth rate of slightly more than 16 percent.[2] Despite this growth, the industry was hit by repeated rounds of price cutting as the three biggest firms battled to capture major accounts. In addition to price cutting, the big three also competed vigorously on the basis of technology, service offerings, and the global reach of their operations. By the late 1990s and early 2000s, however, the intensity of price competition in the industry had moderated, with a degree of pricing discipline being maintained, despite the fact that the growth rate for the industry slowed down. Between 1995 and 2000, the industry grew at 9.8 percent per year. In 2001, however, the volume of express parcels shipped by air fell by 5.9 percent, partly due to an economic slowdown, and partly due to the aftereffects of the September 11 terrorist attack on the United States.[3]

TABLE 1

Main U.S. Air Express Operators, 2001

	Federal Express	UPS	Airborne
U.S. market share*	26%	53%	9%
Revenues	$18.3 billion	$29.7 billion	$2.85 billion
Average return on invested capital (ROIC), 1996–2001	17.9%	10.8%	8%
Aircraft fleet	662	560	118
Employees	215,000	359,000	22,500
Delivery vehicles	43,500	152,000	14,900

Sources: Standard & Poor's Airlines, *Industry Surveys,* March, 2002; Salomon Smith Barney Research; company 10K statements.

*Market share figures are for combined air and ground business.

The Industry in 1973

In 1973, roughly 1.5 billion tons of freight were shipped in the United States. Most of this freight was carried by surface transport, with air freight accounting for less than 2 percent of the total.[4] While shipment by air freight was often quicker than shipment by surface freight, the high cost of air freight had kept down demand. The typical users of air freight at this time were suppliers of time-sensitive, high-priced goods, such as computer parts and medical instruments, which were needed at dispersed locations but which were too expensive for their customers to hold as inventory.

The main cargo carriers in 1973 were major passenger airlines, which operated several all-cargo planes and carried additional cargo in their passenger planes, along with a handful of all-cargo airlines such as Flying Tiger. From 1973 onward, the passenger airlines moved steadily away from all-cargo planes and began to concentrate cargo freight in passenger planes. This change was a response to increases in fuel costs, which made the operation of many older cargo jets uneconomical.

With regard to distribution of cargo to and from airports, in 1973 about 20 percent of all air freight was delivered to airports by the shipper and/or picked up by the consignee. The bulk of the remaining 80 percent was accounted for by three major intermediaries: (1) Air Cargo Incorporated, (2) freight forwarders, and (3) the U.S. Postal Service. Air Cargo Incorporated was a trucking service, wholly owned by twenty-six airlines, which performed pickup and delivery service for the airlines' direct customers. Freight forwarders were trucking carriers who consolidated cargo going to the airlines. They purchased cargo space from the airlines and retailed this space in small amounts. They dealt primarily with small customers, providing pickup and delivery services in most cities, either in their own trucks or through contract agents. The U.S. Postal Service used air service for transportation of long-distance letter mail and air parcel post.[5]

The Federal Express Concept

Founded by Fred Smith, Jr., Federal Express was incorporated in 1971 and began operations in 1973. At that time, a significant proportion of small-package air freight flew on commercial passenger flights. Smith believed that there were major differences between packages and passengers, and he was convinced that the two had to be treated differently. Most passengers moved between major cities and wanted the convenience of daytime flights. Cargo shippers preferred nighttime service to coincide with late-afternoon pickups and next-day delivery. Because small-package air freight was subservient to the requirements of passengers' flight schedules, it was often difficult for the major airlines to achieve next-day delivery of air freight.

Smith's aim was to build a system that could achieve next-day delivery of small-package air freight (less than seventy pounds). He set up Federal Express with his $8 million family inheritance and $90 million in venture capital. Federal Express established a hub-and-spoke route system, the first airline to do so. The hub of the system was Memphis, chosen for its good weather conditions, central location, and the fact that it was Smith's hometown. The spokes were regular routes between Memphis and shipping facilities at public airports in the cities serviced by Federal Express. Every weeknight, aircraft would leave their home cities with a load of packages and fly down the spokes to Memphis (often with one or two stops on the way). At Memphis, all packages were unloaded, sorted by destination, and reloaded. The aircraft then returned back to their home cities in the early hours of the morning. Packages were ferried to and from airports by Federal Express couriers driving the company's vans and working to a tight schedule. Thus, from door to door, the package was in Federal Express's hands. This system guaranteed that a package picked up from a customer in New York at 5 P.M. would reach its final destination in Los Angeles (or any other major city) by noon the following day. It enabled Federal Express to realize economies in sorting and to utilize its air cargo capacity efficiently. Federal Express also pioneered the use of standard packaging with an upper weight limit of seventy pounds and a maximum length plus girth of 108 inches. This standard helped Federal Express to gain further efficiencies from mechanized sorting at its Memphis hub. Later entrants into the industry copied Federal Express's package standards and hub-and-spoke operating system.

To accomplish overnight delivery, Federal Express had to operate its own planes. Restrictive regulations enforced by the Civil Aeronautics Board (CAB), however, prohibited the company from buying large jet aircraft. To get around this restriction, Federal Express bought a fleet of twin-engine executive jets, which it converted to minifreighters. These planes had a cargo capacity of 6,200 pounds, which enabled Federal Express to get a license as an air taxi operator.

After 1973, Federal Express quickly built up volume. By 1976, it had an average daily volume of 19,000 packages, a fleet of thirty-two aircraft, 500 delivery vans, and 2,000 employees, and it had initiated service in seventy-five cities. After three years of posting losses, the company turned in a profit of $3.7 million on revenues of $75 million.[6] However, volume had grown so much that Federal Express desperately needed to use larger planes to maintain operating efficiencies. As a result, Smith's voice was added to those calling for Congress to deregulate the airline industry and allow greater competition.

Deregulation and Its Aftermath

In November 1977, Congress relaxed regulations controlling competition in the air cargo industry, one year before passenger services were deregulated. This involved a drastic loosening of standards for entry into the industry. The old CAB authority of naming the carriers that could operate on the various routes was changed to the relatively simple authority of deciding which among candidate carriers was fit, willing, and able to operate an all-cargo route. In addition, CAB controls over pricing were significantly reduced. The immediate effect was an increase in rates for shipments, particularly minimum- and high-weight categories, suggesting that prices had been held artificially low by regulation. As a result, the average yield (revenue per ton mile) on domestic airfreight increased 10.6 percent in 1978 and 11.3 percent in 1979.[7]

Freed from the constraints of regulation, Federal Express immediately began to purchase larger jets and quickly established itself as a major carrier of small-package air freight. Despite the increase in yields, however, new entry into the air cargo industry was limited, at least initially. This was mainly due to the high capital requirements involved in establishing an all-cargo carrier. Indeed, by the end of 1978, there were only four major all-cargo carriers serving the domestic market: Airlift International, Federal Express, Flying Tiger, and Seaboard World Airlines. While all of these all-cargo carriers had increased their route structure following deregulation, only Federal Express specialized in next-day delivery for small packages. Demand for a next-day delivery service continued to boom. Industry estimates suggest that the small-package priority market had grown to about 82 million pieces in 1979, up from 43 million in 1974.[8]

At the same time, in response to increasing competition from the all-cargo carriers, the passenger airlines continued their retreat from the all-cargo business (originally begun in 1973 as a response to high fuel prices). Between 1973 and 1978, there was a 45 percent decline in the mileage of all-cargo flights by the airlines. This decrease was followed by a 14 percent decline between 1978 and 1979. Instead of all-cargo flights, the airlines concentrated their attentions on carrying cargo in passenger flights. This practice hurt the freight forwarders badly. The freight forwarders had long relied on the all-cargo flights of major airlines to achieve next-day delivery. Now the freight forwarders were being squeezed out of this segment by a lack of available lift at the time needed to ensure next-day delivery.

This problem led to one of the major postderegulation developments in the industry: the acquisition and operation by freight forwarders of their own fleets of aircraft. Between 1979 and 1981, five of the six largest freight forwarders became involved in this activity. The two largest were Emery Air Freight and Airborne Express. Emery operated a fleet of sixty-six aircraft at the end of 1979, the majority of which were leased from other carriers. In mid 1980, this fleet was providing service to approximately 129 cities, carrying both large-volume shipments and small-package express.

Airborne Express acquired its own fleet of aircraft in April 1980 with the purchase of Midwest Charter Express, an Ohio-based all-cargo airline. Then, in 1981, Airborne opened a new hub in Ohio, which became the center of its small-package express operation. This enabled Airborne to provide next-day delivery for small packages to 125 cities in the United States.[9] Other freight forwarders that moved into the overnight mail market included Purolator Courier and Gelco, both of which offered overnight delivery by air on a limited geographic scale.

Industry Evolution, 1980–1986

New Products and Industry Growth

In 1981, Federal Express expanded its role in the overnight market with the introduction of an overnight letter service, with a limit of two ounces. This guaranteed overnight delivery service was set up in direct competition with the U.S. Postal Service's Priority Mail. The demand for such a service was illustrated by its expansion to about 17,000 letters per day within its first three months of operation.

More generally, the focus of the air express industry was changing from being predominantly a conduit for goods to being a distributor of information—particularly company documents, letters, contracts, drawings, and the like. As a result of the growth in demand for information distribution, new product offerings such as the overnight letter, and Federal Express's own marketing efforts, the air express industry enjoyed high growth during the early 1980s, averaging more than 20 percent per year.[10] Indeed, many observers attribute most of the growth in the overnight delivery business at this time to Federal Express's marketing efforts. According to one industry participant, "Federal Express pulled off one of the greatest marketing scams in the industry by making people believe they absolutely, positively, had to have something right away."[11]

Increasing Price Competition

Despite rapid growth in demand, competitive intensity in the industry increased sharply in 1982 following the entry of UPS into the overnight-delivery market. UPS was already by far the largest private package transporter in the United States, with an enormous ground-oriented distribution network and revenues in excess of $4 billion per year. In addition, for a long time, UPS had offered a second-day air service for priority packages, primarily by using the planes of all-cargo and passenger airlines. In 1982, UPS acquired a fleet of twenty-four used Boeing 727-100s and added four DC-8 freighters from Flying Tiger. These purchases allowed UPS to introduce next-day air service in September 1982—at roughly half the price Federal Express was charging at the time.[12]

Federal Express countered almost immediately by announcing that it would institute 10:30 A.M. priority overnight delivery (at a cost to the company of $18 million). None of the other carriers followed suit, however, reasoning that most of their customers are usually busy or in meetings during the morning hours, so delivery before noon was not really that important. Instead, by March 1983, most of the major carriers in the market (including Federal Express) were offering their high-volume customers contract rates that matched the UPS price structure. Then three new services introduced by Purolator, Emery, and Gelco Courier pushed prices even lower. A competitive free-for-all followed, with constant price changes and volume discounts being offered by all industry participants. These developments hit the profit margins of the express carriers. Between 1983 and 1984, Federal Express saw its average revenue per package fall nearly 14 percent, while Emery saw a 15 percent decline in its yield on small shipments.[13]

Beginning around this time, customers began to group together and negotiate for lower prices. For example, Xerox set up accounts with Purolator and

Emery that covered not only Xerox's express packages but also those of fifty other companies, including Mayflower Corp., the moving company, and the Chicago Board of Trade. By negotiating as a group, these companies could achieve prices as much as 60 percent lower than those they could get on their own.[14]

The main beneficiary of the price war was UPS, which by 1985 had gained the number 2 spot in the industry, with 15 percent of the market. Federal Express, meanwhile, had seen its market share slip to 37 percent from about 45 percent two years earlier. The other four major players in the industry at this time were Emery Air Freight (14 percent of market share), Purolator (10 percent of market share), Airborne Express (8 percent of market share), and the U.S. Postal Service (8 percent of market share).[15] The survival of all four of these carriers in the air express business was in question by 1986. Emery, Purolator, and the U.S. Postal Service were all reporting losses on their air express business, while Airborne had seen its profits slump 66 percent in the first quarter of 1986 and now had razor-thin margins.

Industry Evolution, 1987–1996

Industry Consolidation

A slowdown in the growth rate of the air express business due to increasing geographic saturation and inroads made by electronic transmission (primarily fax machines) stimulated further price discounting in 1987 and early 1988. Predictably, this discounting created problems for the weakest companies in the industry. The first to go was Purolator Courier, which had lost $65 million during 1985 and 1986. Purolator's problems stemmed from a failure to install an adequate computer system. The company was unable to track shipments, a crucial asset in this industry, and some of Purolator's best corporate customers were billed 120 days late.[16] In 1987, Purolator agreed to be acquired by Emery. Emery was unable to effect a satisfactory integration of Purolator, and it sustained large losses in 1988 and early 1989.

Consolidated Freightways was a major trucking company and parent of CF Air Freight, the third largest heavy shipment specialist in the United States. In April 1989, Consolidated Freightways acquired Emery for $478 million. However, its shipment specialist, CF Air Freight, soon found itself struggling to cope with Emery's problems. In its first eleven months with CF, Emery lost $100 million. One of the main problems was Emery's billing and tracking system, described as a "rat's nest" of conflicting tariff schedules, which caused overbilling of customers and made tracking packages en route a major chore. In addition, CF enraged corporate customers by trying to add a "fuel surcharge" of 4 to 7 percent to prices in early 1989. Competitors held the line on prices and picked up business from CF/Emery.[17]

As a result of the decline of the CF/Emery/Purolator combination, the other firms in the industry were able to pick up market share. By 1994, industry estimates suggested that Federal Express accounted for 35 percent of domestic air freight and air express industry revenues; UPS had 26 percent; Airborne Express was third with 9 percent; and Emery, DHL (a large Brussels-based international air express carrier), and the U.S. Postal Service each held onto 4 percent of the market. The remainder of the market was split among numerous small cargo carriers and several combination carriers, such as Evergreen International and Atlas Air. (Combination carriers specialize mostly in heavy freight but do carry some express mail.)[18]

The other major acquisition in the industry during this time was the purchase of Flying Tiger by Federal Express for $880 million in December 1988. Although Flying Tiger had some air express operations in the United States, its primary strength was as a heavy cargo carrier with a global route structure. The acquisition was part of Federal Express's goal of becoming a major player in the international air express market. However, the acquisition had its problems. Many of Flying Tiger's biggest customers, including UPS and Airborne Express, were Federal Express's competitors in the domestic market. These companies had long paid Tiger to carry packages to those countries where they had no landing rights. It seemed unlikely that these companies would continue to give international business to their biggest domestic competitor. Additional problems arose in the process of trying to integrate the two operations. These problems included the scheduling of aircraft and pilots, the servicing of Tiger's fleet, and the merging of Federal's nonunionized pilots with Tiger's unionized pilots.[19]

During the late 1980s and early 1990s, there were also hints of further consolidations. TNT Ltd., a large Australian-based air cargo operation with a global network, made an unsuccessful attempt to acquire

Airborne Express in 1986. TNT's bid was frustrated by opposition from Airborne and by the difficulties inherent in getting around U.S. law, which currently limits foreign firms from having more than a 25-percent stake in U.S. airlines. In addition, DHL Airways, the U.S. subsidiary of DHL International, was reportedly attempting to enlarge its presence in the United States and was on the lookout for an acquisition.[20]

Pricing Trends

In October 1988, UPS offered new discounts to high-volume customers in domestic markets. For the first time since 1983, competitors declined to match the cuts. Then in January 1989, UPS announced a price increase of 5 percent for next-day air service, its first price increase in nearly six years. Federal Express, Airborne, and Consolidated Freightways all followed suit with moderate increases. Additional rate increases of 5.9 percent on next-day air letters were announced by UPS in February 1990. Federal Express followed suit in April, and Airborne also implemented selective price hikes on noncontract business of 5 percent, or 50 cents, per package on packages up to twenty pounds.

Just as prices were stabilizing, however, the 1990–1991 recession came along. For the first time in the history of the U.S. air express industry, there was a decline in year-on-year shipments, with express freight falling from 4,455 million ton miles in 1989 to 4,403 million ton miles in 1990. This decline triggered off another round of competitive price cuts, and yields plummeted. Although demand rebounded strongly, repeated attempts to raise prices in 1992, 1993, and 1994 simply did not stick.[21]

Much of the price cutting was focused on large corporate accounts, which by this time accounted for 75 percent by volume of express mail shipments. For example, as a result of deep price discounting in 1994, UPS was able to lure home shopping programmer QVC and computer mail-order company Gateway 2000 away from Federal Express. At about the same time, however, Federal Express used discounting to capture retailer Williams-Sonoma away from UPS.[22] This prolonged period of price discounting depressed profit margins and contributed to losses at all three major carriers during the early 1990s. Bolstered by a strong economy, prices finally began to stabilize during late 1995, when price increases announced by UPS were followed by similar announcements at Federal Express and Airborne.[23]

Product Trends

Second-Day Delivery Having seen a slowdown in the growth rate of the next-day document delivery business during the early 1990s, the major operators in the air express business began to look for new product opportunities to sustain their growth and margins. One trend was a move into the second-day delivery market, or deferred services, as it is called in the industry. The move toward second-day delivery was started by Airborne Express in 1991, and it was soon imitated by its major competitors. Second-day delivery commands a substantially lower price point than next-day delivery. In 1994, Federal Express made an average of $9.23 on second-day deliveries, compared to $16.37 on priority overnight service. The express mail operators see deferred services as a way to utilize excess capacity at the margin, thereby boosting revenues and profits. Since many second-day packages can be shipped on the ground, the cost of second-day delivery can more than compensate for the lower price.

In some ways, however, the service has been almost too successful. During the mid 1990s, the growth rate for deferred services was significantly higher than for priority overnight mail because many corporations came to the realization that they could live with a second-day service. At Airborne Express, for example, second-day delivery accounted for 42 percent of total volume in 1996, up from 37 percent in 1995.[24]

Premium Services Another development was a move toward a premium service. In 1994, UPS introduced its Early AM service, which guaranteed delivery of packages and letters by 8:30 A.M. in select cities. UPS tailored Early AM toward a range of businesses that needed documents or materials before the start of the business day, including hospitals, who are expected to use the service to ship critical drugs and medical devices; architects, who need to have their blueprints sent to a construction site; and salespeople. Although demand for the service is predicted to be light, the premium price makes for high profit margins. In 1994, UPS's price for a letter delivered at 10:30 A.M. was $10.75, while it charged $40 for an equivalent Early AM delivery. UPS believes that it can provide the service at little extra cost because most of its planes arrive in their destination cities by 7:30 A.M. Federal Express and Airborne initially declined to follow UPS's lead.[25]

Logistics Services Another development of some note was the move by all major operators into third-party logistics services. Since the latter half of the 1980s, more and more companies have been relying on air express operations as part of their just-in-time inventory control systems. As a result, the content of packages carried by air express operators has been moving away from letters and documents and toward high-value, low-weight products. By 1994, less than 20 percent of Federal Express's revenues came from documents.[26] To take advantage of this trend, all of the major operators have been moving into logistics services that are designed to assist business customers in their warehousing, distribution, and assembly operations. The emphasis of this business is on helping their customers reduce the time involved in their production cycles and gain distribution efficiencies.

In the late 1980s, Federal Express set up a Business Logistics Services (BLS) division. The new division evolved from Federal Express's Parts Bank. The Parts Bank stores critical inventory for clients, most of whom are based in the high-tech electronics and medical industries. On request, Federal Express will ship this inventory to its client's customers. The service saves clients from having to invest in their own distribution systems. It also allows their clients to achieve economies of scale by making large production runs and then storing the inventory at the Parts Bank.

The BLS division has expanded this service to include some assembly operations and customs brokerage and to assist in achieving just-in-time manufacturing. Thus, for example, one U.S. computer company relies on BLS to deliver electronic subassemblies from the Far East as a key part of its just-in-time system. Federal Express brings the products to the United States on its aircraft, clears them through customs with the help of a broker, and manages truck transportation to the customer's dock.

UPS moved into the logistics business in 1993 when it established UPS Worldwide Logistics, which it positioned as a third-party provider of global supply chain management solutions, including transportation management, warehouse operations, inventory management, documentation for import and export, network optimization, and reverse logistics. UPS's logistics business is based at its Louisville, Kentucky, hub. In 1995, the company announced that it would invest $75 million to expand the scope of this facility, bringing total employment in the facility to 2,200 by the end of 1998.[27]

Airborne Express also made a significant push into this business. Several of Airborne's corporate accounts utilize a warehousing service called Stock Exchange. As with Federal Express's Parts Bank, clients warehouse critical inventory at Airborne's hub in Wilmington, Ohio, and then ship those items on request to their customers. In addition, Airborne has set up a commerce park on 1,000 acres around its Wilmington hub. The park is geared toward companies that want to outsource logistics to Airborne and can gain special advantages by locating at the company's hub. Not the least of these advantages is the ability to make shipping decisions as late as 2 A.M. Eastern time.

Information Systems

Since the late 1980s, the three major U.S. air express carriers have devoted more and more attention to competing on the basis of information technology. The ability to track a package as it moves through an operator's delivery network has always been an important aspect of competition in an industry where reliability is so highly valued. Thus, all the major players in the industry have invested heavily in bar-code technology, scanners, and computerized tracking systems. More recently, UPS, Federal Express, and Airborne have all invested in Internet-based technology that allows customers to schedule pickups, print shipping labels, and track deliveries online.

Globalization

Perhaps the most important development for the long-run future of the industry has been the increasing globalization of the air freight industry. The combination of a healthy U.S. economy, strong and expanding East Asian economies, and the move toward closer economic integration in Western Europe all offer opportunities for growth in the international air cargo business. The increasing globalization of companies in a whole range of industries from electronics to autos, and from fast food to clothing, is beginning to dictate that the air express operators follow suit.

Global manufacturers want to keep inventories at a minimum and deliver just in time as a way of keeping down costs and fine-tuning production, which requires speedy supply routes. Thus, some electronics companies will manufacture key components in one location, ship them by air to another for final assembly, and then deliver them by air to a third location for sale. This setup is particularly convenient for industries producing small high-value items (for example, electronics, medical equipment, and computer software) that can be economically transported by air and for whom just-in-time inventory systems are crucial for keeping down costs. It is also true in the fashion industry, where timing is crucial. For example, the clothing chain The Limited manufactures clothes in Hong Kong and then ships them by air to the United States to keep from missing out on fashion trends.[28] In addition, an increasing number of wholesalers are beginning to turn to international air express as a way of meeting delivery deadlines.

The emergence of integrated global corporations is also increasing the demand for the global shipment of contracts, confidential papers, computer printouts, and other documents that are too confidential for Internet transmission or that require real signatures. Major U.S. corporations are increasingly demanding the same kind of service that they receive from air express operators within the United States for their far-flung global operations.

As a consequence of these trends, rapid growth is predicted in the global arena. According to forecasts, the market for international air express is expected to grow at approximately 18 percent annually from 1996 to 2016.[29] Faced with an increasingly mature market at home, the race is on among the major air cargo operators to build global air and ground transportation networks that will enable them to deliver goods and documents between any two points on the globe within forty-eight hours.

The company with the most extensive international operations by the mid 1990s was DHL. In 1995, DHL enjoyed a 44 percent share of the worldwide market for international air express services (see Table 2).[30] Started in California in 1969 and now based in Brussels, DHL is smaller than many of its rivals, but it has managed to capture as much as an 80 percent share in some markets, such as documents leaving Japan, by concentrating solely on international air express. The strength of DHL was enhanced in mid 1992 when Lufthansa, Japan Airlines, and the Japanese trading company Nisho Iwai announced that they intended to invest as much as $500 million for a 57.5 percent stake in DHL.

TABLE 2

International Air Express Market Shares, 1995

Company	Market Share
DHL International	44%
Federal Express	21%
UPS	12%
TNT	12%
Others	11%

Source: Standard & Poor's, "Aerospace and Air Transport," *Industry Surveys*, February 1996.

Although Lufthansa and Japan Airlines are primarily known for their passenger flights, they are also among the top five air freight haulers in the world, both because they carry cargo in the holds of their passenger flights and because they each have a fleet of all-cargo aircraft.[31]

TNT Ltd., a $6 billion Australian conglomerate, is another big player in the international air express market, with courier services from 184 countries as well as package express and mail services. In 1995, its share of the international air express market was 12 percent, down from 18 percent in 1990.[32]

Among U.S. carriers, Federal Express was first in the race to build a global air express network. Between 1984 and 1989, Federal Express purchased seventeen other companies worldwide in an attempt to build its global distribution capabilities, culminating in the $880 million purchase of Flying Tiger. The main asset of Flying Tiger was not so much its aircraft, but its landing rights overseas. The Flying Tiger acquisition gave Federal Express service to 103 countries, a combined fleet of 328 aircraft, and revenues of $5.2 billion in fiscal year 1989.[33]

However, Federal Express has had to suffer through years of losses in its international operations. Start-up costs were heavy, due in part to the enormous capital investments required to build an integrated air and ground network worldwide. Between 1985 and 1992, Federal Express spent $2.5 billion to build an international presence. Faced also with heavy competition, Federal Express found it difficult to generate the international volume required to fly its planes above the break-even point on many international routes. Because the demand for outbound service from the United States is greater than the demand for inbound service, planes that left New York full often returned half empty.

Trade barriers have also proved very damaging to the bottom line. Customs regulations require a great deal of expensive and time-consuming labor, such as checking paperwork and rating package contents for duties. These regulations obviously inhibit the ability of international air cargo carriers to effect express delivery. Federal Express has been particularly irritated by Japanese requirements that each inbound envelope be opened and searched for pornography, a practice that seems designed to slow down the company's growth rate in the Japanese market.

Federal Express has also found it extremely difficult to get landing rights in many markets. For example, it took three years to get permission from Japan to make four flights per week from Memphis to Tokyo, a key link in the overseas system Then in 1988, just three days before the service was due to begin, the Japanese notified Federal Express that no packages weighing more than 70 pounds could pass through Tokyo. To make matters worse, until 1995 Japan limited Federal Express's ability to fly on from Tokyo and Osaka to other locations in Asia. The Japanese claimed, with some justification, that due to government regulations, the U.S. air traffic market is difficult for foreign carriers to enter, so they see no urgency to help Federal Express build a market presence in Japan and elsewhere in Asia.[34]

After heavy financial losses, Federal Express abruptly shifted its international strategy in 1992, selling off its expensive European ground network to local carriers to concentrate on intercontinental deliveries. Under the strategy, Federal Express relies on a network of local partners to deliver its packages. Also, Federal Express entered into an alliance with TNT to share space on Federal Express's daily trans-Atlantic flights. Under the agreement, TNT flies packages from its hub in Cologne, Germany, to Britain, where they are loaded onto Federal Express's daily New York flight.[35]

UPS has also built up an international presence. In 1988, UPS bought eight smaller European air freight companies and Hong Kong's Asian Courier Service, and it announced air service and ground delivery in 175 countries and territories. However, it has not been all smooth sailing for UPS either. UPS had been using Flying Tiger for its Pacific shipments. The acquisition of Flying Tiger by Federal Express left UPS in the difficult situation of shipping its parcels on a competitor's plane. UPS was concerned that its shipments would be pushed to the back of the aircraft. Since there were few alternative carriers, UPS pushed for authority to run an all-cargo route to Tokyo, but approval was slow in coming. "Beyond rights," to carry cargo from Tokyo to further destinations (such as Singapore and Hong Kong), were also difficult to gain.

In March 1996, UPS sidestepped years of frustrations associated with building an Asian hub in Tokyo by announcing that it would invest $400 million in a Taiwan hub, which would henceforth be the central node in its Asian network. The decision to invest in an Asian hub followed closely on the heels of a 1995 decision by UPS to invest $1.1 billion to build a ground network in Europe. In September 1996, UPS went one step further toward building an international air express service when it announced that it would start a pan-European next-day delivery service for small packages. UPS hopes that its recent moves will finally push the international operations of the carrier into the black after eight years of losses.[36]

The other U.S. carrier that is making a determined push overseas is Airborne Express. From the start, however, Airborne's strategy differed from that of Federal Express and UPS because it decided not to invest in its own international air fleet and ground operations. Airborne's strategy has two components. First, it will continue to fly its own planes in the United States but will book space on other air carriers for shipments going overseas. Second, it has been looking for strategic alliances with foreign companies that would give it market access and ground operations overseas. In 1989, the company announced an alliance with Mitsui & Co., a $125 billion-a-year Japanese trading and finance firm, and Tonami Transportation Co., operators of a ground-based express delivery service in Japan called Panther Express. The deal called for Mitsui to purchase $40 million worth of Airborne's stock and to provide $100 million in aircraft financing over five years and for the partners to collaborate in building volume in the Japan–U.S. air express market.

Industry Evolution, 1997–2002

Competitive Trends

The industry continued to grow at a solid rate through 2000, which helped to establish a stable pricing environment. In 2001, things took a turn for the worse, with recessionary conditions in the United States triggering a 7.6 percent decline in the number of domestic packages shipped by air. Even though the economy started to rebound in 2002, analysts were predicting only a 3 percent increase in the number of packages shipped by air.[37] Despite the weak environment, pricing discipline remained solid. Unlike the 1990–1991 recession, there was no price war. Indeed, in early 2002, UPS pushed through a 3.5 percent increase in prices, which was quickly followed by the other carriers. The carriers were also successful in tacking on a fuel surcharge to the cost of packages to make up for sharply higher fuel costs in 2001.[38]

During 1997–2002, several notable trends occurred in the industry. First, all three players continued to build their logistics services. UPS was reportedly the most successful in this area. By 2000, UPS's logistics business was the largest in the industry, with revenues of over $1 billion, an increase of 58 percent over the prior year. Growth forecasts were as high as 40 percent per year.[39] UPS was reportedly stealing share from FedEx in this area. (Federal Express changed its name to FedEx in 2000.) Most analysts expected logistics services to continue to be a growth area.

Second, all three carriers focused on supplementing their air networks with extensive ground networks and ground hubs to ship packages overnight. With more customers moving from overnight mail to deferred services, such as second-day delivery, this shift in emphasis has become a necessity. Demand for deferred services help up reasonably well during 2001, even as demand for overnight packages slumped. Prices for deferred and ground services are considerably lower than are prices for air services, but so are the costs (see Table 3). UPS has been the most aggressive in building ground delivery capabilities (of course, it already had extensive ground capabilities before its move into the air). In 1999, UPS decided to integrate overnight delivery into its huge ground transportation network. The company spent about $700 million to strengthen its ground delivery network by setting up regional ground hubs. By doing so, it found it could ship packages overnight on the ground within a 500-mile radius. Because ground shipments are cheaper than air shipments, the result was a significant cost savings for UPS. The company also deferred delivery of about 123 aircraft that were on order, reasoning that they would not be needed as quickly because more of UPS's overnight business was moved to the ground.[40]

FedEx has also accelerated the buildup of its ground network. In 1997, FedEx spent $500 million to acquire an established ground shipping company, supplementing its existing capability. It spent an additional $150 million in 2001 to strengthen the system and hopes to be able to provide ground service to all U.S. homes by the end of 2002, giving it a similar capability to UPS. In addition, FedEx struck a deal in 2001 with the U.S. Postal Service (USPS), under which FedEx will provide airport-to-airport transportation for 250,000 pounds of USPS Express Mail packages nightly and about 3 million pounds of USPS Priority Mail packages. The Priority Mail will be moved on FedEx planes that normally sit idle during the day. The deal could reportedly be worth $7 billion in additional revenues to FedEx over the seven-year term of the agreement. In addition, FedEx should reap cost savings from the better utilization of its lift capacity.[41]

The third trend has been a move toward selling various product offerings—including air delivery, ground package offerings, and logistics services—to business customers as a bundle. The basic idea behind bundling is to offer complementary products at a bundled price that is less than would have been the case if each item had been purchased separately. Yet again, UPS has been the most aggressive in offering bundled services to corporate clients. UPS is clearly aiming to set itself up as a one-stop shop offering a broad array of transportation solutions to customers. FedEx has also made moves in this area, and most recently, Airborne Express started to bundle its product offerings in mid 2001.[42]

The fourth trend of note has been ongoing speculation that further consolidation is likely in the

TABLE 3

Product Yield Comparisons, 2001

Company	Overnight Air	Deferred Air	Ground
Airborne	$9.16	$7.03	$5.60
FedEx	$14.96	$10.88	$5.98
UPS	$19.32	$12.52	$6.03

Source: Salomon Smith Barney Research, *Wrap It Up—Bundling and the Air Express Sector,* May 3, 2002.

industry. The source of most of the rumors has been Deutsche Post (DP). The recently privatized German postal service acquired in the late 1990s a 51 percent interest in DHL, whose U.S. airline, DHL Airways, has a small position in the U.S. air express market (remember, DHL is a major player in the international market). DP has made no secret about its desire to build a strong position in the global parcel express, forwarding, and third-party logistics businesses. DP spent approximately $5 billion to acquire several companies in the logistics business between 1997 and 1999. In November 2000, Deutsche Post went private with an initial public offering that raised $5.5 billion. In 2001 and 2002, it was rumored to be considering bids for two U.S. companies, Airborne Express and BAX Global, a freight forwarder. Other possible takeover candidates include Consolidated Freightways, another small player in the air express industry but one with a large ground network.

Currently, DP is theoretically constrained in its ability to operate an airline in the United States by the law that limits foreign ownership of a U.S. airline to 25 percent (air express operators are considered airlines for the purposes of this law). However, DP seems to have circumvented this law in the case of DHL by establishing a complex ownership structure. DP owns 51 percent of DHL, which in turn owns 23 percent of DHL Airways, the U.S. airline operations of DHL. The belief is that DP will use DHL Airways as the vehicle for any U.S. acquisitions, such as the rumored acquisition of Airborne Express. In early 2001, USPS and FedEx filed petitions against Deutsche Post with the U.S. Department of Transportation, contending that DP's ownership of DHL Airways was against the law (they argued that DP in effect controlled DHL Airways). However, the U.S. Department of Transportation rejected the petitions, potentially opening the way for DP to acquire Airborne Express under a similar ownership and control arrangement.[43]

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