CHAPTER 8

WHAT NEXT?

> We're going to destroy the airline business, as we know it.[203]

The economic slowdown beginning in the middle of 2000, the September 11, 2001, events, and the war in Iraq have affected the industry quite dramatically. But even before the end of 2000 and before September 11, it had become obvious that the dominant business model of the major network airlines, particularly their heavy reliance on revenue management and high-frequency business travel, was losing ground, and that a major revision was necessary. Then September 11th and subsequent events prompted an urgent search for adequate strategic responses, whether a significant adjustment of the old business model or adoption of a brand-new one.

If there is one major lesson to be learned from looking at the industry's evolution since deregulation, it is that forecasts seldom materialize—the market has a life of its own, and firms often show surprising ways to respond and adjust to unfolding events. This observation notwithstanding, what are we likely to see next? To answer this question, it is instructive, first, to take a step back in time and look again at the evolution of the industry's structure since the early 1990s, and then try to figure out in what direction we may be heading.[204]

1. EARLY 1990S—INDUSTRY IN CRISIS

At one time in the early 1990s the ability of the major airlines to survive was seriously in doubt. Highly leveraged, crippled by high fuel and labor costs, battered by price wars, and weakened by a poor economy, the airlines' future looked quite grim, and talks about bust, doom, and re-regulation were rife.

A major casualty of the early 1990s crisis was Pan American Airlines. Pan Am was a pioneering airline. It served as the flagship carrier of the nation during the post-WWII era and was early on granted most of the lucrative international flying rights. Pan Am symbolized the US spirit and its presence throughout the world. It enjoyed a unique monopolistic market position, granted by the government and

[203] Ryanair's Chief Executive Officer Michael O'Leary, quoted in Reuters Update, June 3, 2003, by Michael Roddy.

[204] I reiterate certain trends in order to keep this chapter coherent on a stand-alone basis.

regulated by the Civil Aeronautics Board. Its demise in 1992 is emblematic of the failure of the archetypal business model of a pre-deregulation airline to adjust to the challenges of free market competition. Surprisingly, American Airlines—once considered the most vulnerable major airline and a candidate for exiting the market—emerged as a leader, and its hub-and-spoke network strategy became the dominant business model for over 20 years.

All major airlines suffered during the early 1990s crisis. Pan Am and Eastern Airlines were liquidated, and TWA, Continental, and America West reorganized under protection of the bankruptcy court. Other majors reorganized and restructured while threatening to file for bankruptcy protection. Cutting costs, reducing capacity, renegotiating debt contracts, changing long-term fleet planning and route structures, and increasing market share and consolidation by acquiring assets from failing airlines were the typical major incumbents' responses.

2. MIDDLE 1990s

Improving economic conditions beginning around the middle 1990s, followed by an unprecedented boom into the end of the decade, changed the picture quite dramatically.

2.1 Recovery

TWA and Continental Airlines emerged from bankruptcy. TWA was never able to make it, though, and was eventually acquired by American Airlines, joining the list of extinct pre-deregulation iconic airlines: Pan Am, Eastern, and Braniff. Continental—not so long before assigned the least chance to survive among the majors—took advantage of the Bankruptcy Code and successfully restructured its operations and finances. It then surprisingly emerged as one of the most cost-efficient and financially strong major airlines. Northwest Airlines, very highly leveraged and a possible candidate for filing for bankruptcy protection itself, was successful in reorganizing without court help, and emerged as an efficient major airline as well.

A new business model developed, characterized by a complex, multi-hub, global-network system. Capturing dominant domestic market shares provided high-density feed into the complex high-fixed cost, high-frequency network system. Vertical integration agreements with domestic commuter airlines enhanced the system's density. The consolidation of the commuter airlines and their integration with the majors during the late 1980s and early 1990s came at a time of struggle for the commuters. Under-capitalized, hit hard by several tragic accidents, and frequently with poor safety records, their long-run survivability was called into question. But starting in the late 1990s and with the advantage of new 50- to 100-seat jet aircraft, they emerged stronger than ever before, biting off a piece of the

majors' traditional market and creating what some observers call the *commuter revolution*.

Code-sharing and other agreements with major foreign airlines extended the system into international markets and created a small number of mega global airlines dominated by United, American, and Delta. These airlines—which had provided mostly domestic travel during four decades of regulation—became the world industry leaders in providing global travel. According to this business model, an airline offers one-stop shopping for many consumers, offering many composite products and attempting to maximize network revenues by demand-based price discrimination through sophisticated yield management and other techniques.

Southwest is a unique case of a successful business model that in many respects reflects a binary opposition, a mirror image of the major incumbents' model. Instead of offering "everything to everyone," it has offered a standard, simple, mostly point-to-point, low-fare, no-frills, travel option in niche markets, consistently generating new demand and expanding markets. Using one type of aircraft, non-unionized labor, and mostly secondary niche airports, Southwest attained the industry's lowest cost structure and highest productivity, consistently experiencing robust growth in market share. Southwest is the only airline that survived the crisis of the early 1990s with no major losses. It has persistently encouraged competition by stimulating new demand as well as attracting passengers from the major network airlines.

2.2 Startup Entry

The early 1990s crisis also encouraged the entry of new startups, as aircraft, labor, and other inputs became available at very attractive prices. Most startups attempted to copy the Southwest business model (with some variations) for market entry. In the mid-1990s, it seemed for a while that a few startups had gained market momentum—a very small yet significant critical mass required for initial survivability.

ValueJet was the most promising startup of the time. It became the darling of the regulator—which hoped that low-cost competition would restrain major airline fares; of investors—who speculated that ValueJet would become the next Southwest Airlines; and of passengers—who enjoyed low fares on short point-to-point routes.

The startup business model ValueJet adopted was in many ways consistent with the traditional entry strategy followed during the 1980s. The airline took advantage of the extremely low prices in the used aircraft market at that time, and used non-unionized labor offering low-fare, no-frills service. Unlike Southwest, it also targeted markets that were served by a major airline, attempting to take advantage of its low-cost structure. Using low-cost used aircraft lowered the working capital threshold and the sunk costs of entry into the market. Other low-cost startups appeared as well during this period, taking advantage of available low-cost grounded or retired aircraft, but most of them failed or barely survived.

The tragic accident of a ValueJet aircraft in 1996 put a hold on any meaningful startup entry for several years. The notion that low-cost startup airlines are prone to accidents came to dominate the public view and directed the regulator's policy.

New, more restrictive safety requirements and increased scrutiny were imposed on such airlines; such measures included limiting the number of aircraft a startup may operate as well as its fleet growth. The latter policy was in response to the criticism the regulator mounted in the ValueJet case that too fast an expansion was allowed.

Yet startup airlines needed to build a critical market mass to survive. An entry attempt by somewhat better-capitalized West Pacific Airlines, using a newer generation of 737 aircraft, failed as well during this period.

3. LATE 1990s

By the end of the century it had become conventional wisdom that startup airlines were doomed to fail. The market had evolved into two clearly identifiable groups. On the one hand, each one of the major hub airlines offered complex global reach including seamless interlining with network members. In this group, passengers were discriminated along the lines of their demand elasticity. On the other hand, the low-cost, low-fare, group, with only one significant member—Southwest—offered simple fares, on mostly point-to-point travel.

3.1 Antitrust Concerns

There seemed to be no significant price competition among members of the major hub airlines group, although there has been limited yet increasing competition between them and Southwest. Fares have been significantly lower in markets that are served by both Southwest and a major airline than in those served only by majors. These circumstances have been expanding along with the consistent growth of Southwest's operation.

During the late 1990s, observers and antitrust regulators questioned whether the major airlines were enjoying market power, earning monopolistic premiums on hub routes, using predatory pricing against low-cost entry, and expanding their market power through code-share agreements. At this time, the government launched an unprecedented number of antitrust regulatory initiatives targeting airlines' competitive conduct. Yet, in spite of the undoubted dominance of the major airline networks, market structure didn't stabilize and the group of major airlines continued their attempts to further consolidate and integrate their domestic and international operations, perhaps into three or four major global networks.

Certain observers interpreted this trend as a move toward increasing network efficiency. Others saw it as a move toward enhancing the majors' monopolistic power. A strong antitrust stance by the government, however, seemed to have halted further integration moves to some extent. The government approved the acquisition of TWA by American in a prepackaged bankruptcy procedure, making American the largest airline in the world. United—the previous largest world airline—pulled out of its agreement to acquire US Airways for several reasons, including the government's position on antitrust-related issues.

A booming economy toward the end of the 1990s resulted in unprecedented demand for air travel among both business and leisure travelers. In 1995, after five years of constant losses, the US airlines started to post positive earnings, and continued to do so during the next five years. It is significant that although profits were robust during the second half of the decade, domestic yield was quite stable at around 13.75 cents per revenue passenger mile. Profitability was obtained by price discrimination and increasing load factors, as the average major airline's load factor broke records and surpassed the 70% mark in every one of the last four years of the decade. In 2000 nearly 650 million passengers boarded planes.

The increased density and use of the network kept earnings positive but declining, and put operational pressure on the system, resulting in congestion, delays, and poorer product quality and passenger satisfaction. Deteriorating product quality attracted political and regulatory attention, framed in terms of protecting passengers' rights.

3.2 JetBlue—A New Entry Model

JetBlue entered the market in February 2000, when the major airlines' hegemony was undoubted, and most observers believed the startup entry was doomed to fail. The entry model adopted by this airline defied conventional wisdom and the past experience of traditional entry and raised skeptics' eyebrows. On the low-cost, no-frills, side of the market, JetBlue faced the hurdle of a difficult-to-duplicate Southwest Airlines pattern. On the other side, the powerful majors s posed a serious threat to new entry with their dominant hub structure, global reach, and reputation for aggressive —by some counts predatory—response to new entry.

JetBlue positioned itself as a low-fare, high-quality yet no-frills airline, and selected as its major base the slot-controlled New York JFK Airport—usually shunned by startups— ordering a large number of brand-new, very expensive Airbus A320s as a single aircraft type for its fleet. It planned to start up operations just beyond the peak of the economic cycle, unlike most other new entries, which tried to take advantage of the availability of cheaper outputs during low cycle periods.

This model stands in striking contrast to the traditional entry model, which involves a small number of inexpensive used aircraft for initial market penetration at a low entry cost. JetBlue's entry required substantial initial (mostly sunk) capital in order to cover the cost of obtaining sufficient market mass from both the demand and supply sides. JetBlue was backed by an unprecedented large capital investment, compared to the typical several million-dollar amounts that had characterized traditional new entries. It is worth noting that under-capitalization had been identified as a major cause for all startup failures prior to JetBlue.

A high-quality low-price entry strategy may seem very attractive at first glance. Obviously, an airline, or any startup firm for that matter, is likely to win a market if it can indeed provide a better product for a significantly lower price. Achieving that goal, however, is a very different matter, since high quality usually costs more and requires substantial investment and sunk costs. This is particularly true when it comes to acquiring brand-new aircraft with a normal price tag of $50 million each.

JetBlue took advantage of the fierce competition between Airbus and Boeing and Airbus's aggressive move to gain market share by reducing prices and accommodating startup airlines acquiring new aircraft during their startup period. It accommodated the public perception and the regulator's focus on old aircraft as a potential safety risk. It also took advantage of the "honeymoon" period when maintenance costs of new aircraft are minimal. The combination of a relatively lower new aircraft acquisition cost at favorable terms, non-unionized labor, and initial low maintenance cost provided a highly competitive (although arguably temporary) production cost. Surprise and skepticism as to this strategy not withstanding, it has since then been duplicated by numerous startups over the world.

3.3 Economic Downturn

The average airlines load factor peaked in the year 2000, yet earnings—although remaining positive—fell significantly from previous years, due to the softening economy. Industry profitability for the 12 months ending June 30, 2001, declined substantially in comparison to the previous year. The number of business and other full-paying passengers declined quite dramatically, negatively affecting the major incumbents' revenues. The revenues from full-paying passengers fell 50% in the summer of 2001 compared to the summer of 2000.

During 2001, and before the tragic events of September 11, it had become clear that the complex high-frequency network system that the majors had built did not generate enough revenue to be maintained during an overall demand drop, most particularly the disappearance of full-fare-paying passengers. For the first time, the industry experimented with price discrimination during an economic downturn, which set the stage for a significant restructuring, as the major airlines discovered this practice made them more sensitive than the low-cost carriers to the economic downturn. In fact, the low-cost airlines as a group were able to expand operations and maintain revenue growth in spite of the economic trend.

Passengers became more aware of and discontented with the major network airlines' pricing practices, and many business travelers were no longer willing to trade off ticket restrictions for the price they commanded. They joined the group of low-fare payers. The latter group, on the other hand, became frustrated with the increasing restrictions and reduced quality imposed on their seats. The major airlines found themselves in a bind, as the previously winning policy of restricting the low-fare travelers did not stimulate full-fare revenues any longer, and at the same time reduced demand and revenues by low-fare travelers. The effectiveness of the traditional approach to yield management (segmenting and fencing high-fare paying passengers by imposing restrictions) has eroded as passengers have become more sensitive to price and often buy low-fare tickets even if actually they were willing to pay more.[205]

Even before the events of September 11, 2001, it had become all too clear that the dominant business model of the previous decade needed to be adjusted to a new

[205] See, for example, Cooper, Homem-de-Mello and Kleywegt (2004) for the *spiral-down effect*.

reality. This conclusion was amplified by the continuing growth and relative success of the group of low-fare startup airlines.

4. CRISIS ONCE AGAIN

The 1990s ended with the notion that the major network airlines had become too strong and used their unchallenged power to limit new entry and extract super-normal profits. The early 2000s, in contrast, started with the notion that the major network airlines may be doomed to go the way of the dinosaur. Calls for government antitrust intervention were replaced with calls for government financial assistance in order to keep them flying. Just several years before believed invincible, the major network airlines were straggling for survival and for the first time since deregulation faced meaningful competition from low-cost mostly point-to-point airlines.

4.1 September 11, 2001, and the New Terrorist Threat

Early one morning—after more than ten years when US aircraft had not been involved in fatal crashes due to sabotage—four United and American aircraft carrying passengers and ten tons of jet fuel each were flown into the World Trade Center, into the Pentagon, and into the ground in Pennsylvania. The next morning, we awoke to a new reality that had immediate devastating operational and economic challenges along with substantial new long-term implications.

A mere three months later, an American Airlines passenger was subdued by the cabin crew as he was trying to ignite explosives in his shoe. A number of other aircraft were diverted and forced to land for reasons of anthrax scares. All this reflected the vulnerability of air transportation to biological and chemical terrorism. In this new environment, F-15 and F-16 jet fighters were summoned to follow suspicious commercial flights over US territory. Passengers had to stand in never-before-experienced long lines and wait for security inspections. They were subject to removing their shoes and sometimes even their clothing, and their nail clippers and razors were confiscated. Wide and frequent media coverage of these issues and reports of alleged failures of security systems, as they struggled to adjust to the new reality, did nothing but increase passengers' concerns and exacerbate their fears about flying.

At the end of 2002, a hand-held missile was fired at (but fortunately missed) an Arkeia Israeli Airlines chartered flight of a 757-300 with 270 passengers on board taking off from Mombassa, Kenya. This, with follow-up media coverage of potential hand-held missile risks, demonstrated, that in this new reality, taking proper security steps at airports and on board aircraft might not be enough to prevent terrorist sabotage. Suicide bombings of exotic tourist attractions in Bali and Kenya in 2002 raised travelers' concerns all the more. These are the kind of new exotic destinations that deregulation had made possible for a wide range of people at affordable rates. It was suddenly clear that flying would never again be the same.

4.2 *Industry in Crisis*

The industry posted $10 billion in operating losses for the calendar year 2001, $4.5 billion of that generated during the fourth quarter of the year immediately after September 11 alone. Total annual losses were over $6 billion. Operating losses for the calendar year 2002 were roughly $9 billion, and total losses approached $7 billion.

A careful review of airlines financial performance reveals that, although the industry as a whole posted operating losses, the low-cost airlines, as a group, posted operational profits.[206] Financial data confirm a trend that had started before September 11, 2001, that in the new environment major network airlines would suffer proportionally more than the competing low-cost airlines. In fact, in a relatively short period immediately after September 11, several low-fare and regional airlines were able to recover, increase capacity, and actually grow. The major airlines by contrast reduced capacity and consolidated operations, and yet continued to show substantial losses.

The three largest major airlines, once considered invincible, prompting concerns of monopolistic power and the blocking of meaningful entry, were struggling to survive. Large, complex, high-frequency hub-and-spoke networks were slimmed down; flight frequencies were reduced, and flights were spread more evenly throughout the day in order to better use resources and reduce costs. The grounding of many aircraft and switches to smaller planes reduced capacity. Orders for new aircraft were deferred or cancelled.

Revenue management, considered by many to be the success story of the late 2000s, was blamed to a large degree for the majors' failures. The advantage of scope density and scale inherited in a high-frequency, complex, hub-and-spoke network, once considered the majors' source of market power, lost its magic.

In early 2003, United Airlines filed for bankruptcy protection. United had been considered the most financially sound airline during the regulation regime. It was surely thought to have been in the best position to enter deregulation, becoming the largest network airline in the world and one of a group of three major airlines that dominated the industry for more than two decades. In early 2003, industry commentators saw it was conceivable United might even be forced to liquidate, and that American Airlines and possibly other majors would be forced to file for court protection under Chapter 11 of the bankruptcy code.

The September 11 events, the overhanging uncertainty in the US regarding a possible war with Iraq, and continuing terrorist threats only accelerated the economic downturn. All these circumstances had a substantial overall negative economic impact. For the airlines, this represented a form of double jeopardy, because in addition to the general economic recession, they had served as a direct target for terrorist attacks. Unlike the early 1990s' crisis, when the Gulf war ended

[206] Particularly Southwest, JetBlue, and AirTran.

in only a few months and oil prices stabilized quite quickly, the new terrorist threat is of an ongoing nature and with long-term structural impact. In addition, oil prices remained high and even increased during the early 2000s. To make things even worse, a new strand of a flu virus (SARS) originating in China appeared in 2003, further affecting passenger demand for flying, and forcing additional reductions in capacity and fares in markets that otherwise seemed somewhat less vulnerable to terrorist threats.

A new type of government security regulation has been imposed on the market. The safety and environmental issues that topped the regulatory agenda during the 1990s gave way to quite new concerns and different public perceptions of terrorist threats and the way to address them. New institutions have evolved to face the new threats. And new questions have been raised as well. How should the economic burden of September 11 and its aftermath be allocated across society? Should airlines be directly subsidized, and if so, on what basis? Who or what sort of agency should be responsible for passenger security? Who should pay for it? Should standard cost-benefit analysis be applied to terrorist threats?

Observing the public and political debate one cannot escape a sense of *déja vu*. As in the previous crisis, perceptions of bust and gloom have triggered renewed calls for re-regulation of the industry. The more severe nature of the industry crisis and the ongoing terrorist threats have been suggested by some to be a reason to re-regulate the industry and even to nationalize it. We should remind ourselves that calls for the regulation or the nationalization of national infrastructure network industries that involve enormous fixed costs and face challenges of volatile demand and cyclical overcapacity are by no means novel, and can be traced to political debates that raged at the turn of the last century.

Yet, on the other side of the debate, one can hear other familiar voices advocating the minimization of government intervention in the market and letting the free market work its course. Such observers argue in favor of continuing the deregulation process through the privatization of airports and the traffic control system and further liberalization of international competition, including on domestic city-pair routes. Proponents of this view expect fewer surviving major hub-network airlines to emerge from this crisis, airlines that have lower costs and are better suited to the new patterns of the public's travel demands. Reduction in costs and increases in market shares of the surviving major network airlines are expected to be the basis of their market strength, once the economy recovers.

5. THE LOW-COST AIRLINES PHENOMENON

There is increasing evidence that the so-called *low-cost airlines,* offering mostly point-to-point service, have fared better than the large incumbent network airlines during the economic downturn.[207] After a long time when the major network airlines

[207] The term "low–cost" airlines became synonymous with startup airlines or new entry by non-major network airlines. They are also sometimes called low-fare or discount airlines. The main members of this group in the US are Southwest, ATA Airlines, America West, JetBlue, Spirit, and Airtran (previously ValueJet).

were considered invincible and Southwest a singular success story, it appears for the first time after deregulation that new entrants in this group in fact pose a serious and increasing threat to the majors. Many industry observers have interpreted the relative success of this group, especially in the face of the severe crisis affecting the majors, as an indication of the failure of the complex hub network as a business model.

The emergence of the new low-cost airlines is an important phenomenon that deserves further discussion. We should note at the outset that the name *low-cost* that was coined to describe this group of airlines may be somewhat misleading, as these airlines offer a different kind of service, and only segments of the overall service offered by the major incumbents. In fact, the airlines in this group are quite diverse with respect to the specific market opportunities they respond to, their specific market penetration, and their overall business strategies. One striking difference between Southwest and JetBlue, for example, is that the former built its growth on *stimulating* market demand by using low fares and relatively high capacity (several round trips per day), and by becoming a major player in very carefully selected often secondary airports in city-pair markets. The JetBlue entry is more of a market *skimming* nature. It often involves flying a limited number of flights in a relatively dense market without becoming a major player in these markets.

The low-cost group, however, shares certain similarities that are noteworthy. They offer mostly point-to-point linear connections, simpler pricing structures, and a minimal number of traditional frill offerings. They serve short- to medium-range (in the US domestic) markets. They usually (but not always) operate one type of aircraft fleet, employ non-unionized labor, and make extensive use of booking and electronic ticketing (major airlines usually pay 9% sales commissions). They have grown quite dramatically, starting around the beginning of 2001, and have maintained their growth post-September 11, 2001. Atypically of traditional entry models, most of them acquired a large number of *new* aircraft, and have enjoyed very attractive prices, financing, and accommodating terms provided by the aircraft manufacturers.

The low-cost startup entry is a trend that is likely to significantly affect the industry evolution. Several of the characteristics of this trend deserve further discussion and analysis.

5.1 A Global Phenomenon

The emergence of this group of airlines is by no means unique to the US. It is in fact being taken as a serious threat by major incumbent airlines throughout the world.

In Canada, for example, WestJet, Canada 3000 (the latter a result of a merger between Royal Airlines and CanJet), and Jetsgo have captured almost 20% of Air Canada's traditional domestic market share since the beginning of 2000 and December 2002. Such a competitive response wasn't considered at all likely in December 1999 when the Canadian regulator announced that for no better alternative it was forced to approve the merger and integration of the ailing Canadian Airlines into Air Canada to create one major airline that would dominate

the Canadian market. The regulator was very concerned that such integration might in fact create a monopoly and placed various restrictions on the new Air Canada.

Despite these concerns, competition has actually increased markedly. A significant reduction in overall demand due to September 11, the impact of the economic recession, and loss of market share to the new low-cost startup carriers forced Air Canada to file for bankruptcy protection in 2003. Air Canada introduced its own brand name, Tango, and a subsidiary airline called Zip as answers to this new competition. The low-fare market in Canada may have become too crowded and too competitive.

In Europe, the Irish entrants Ryanair and the British EasyJet are the most significant low-cost carriers to seriously threaten the struggling incumbent majors.

5.2 New Aircraft and the Manufacturers' Role

The developing relationship between the aircraft manufacturers and the group of low-cost airlines is a new and very important element in the current dynamics of the airline industry that deserves further discussion. The economic downturn commencing in early 2001 and the financial post-September 11 crisis forced the major incumbent airlines to reduce capacity, ground aircraft, and defer new aircraft deliveries and orders. This, of course, made the major airlines—the traditional buyers of new aircraft—unlikely candidates for acquiring new aircraft.

The manufacturers, however, had built a large (mostly fixed-cost) production capacity, and looked to book sales even at significantly reduced prices. New aircraft deliveries in 2002 dropped to 673 units after four years of between 800 to 900 new aircraft deliveries per year. Deliveries for 2003 were below 600 units. By the end of 2002, more than 2000 aircraft had been removed from service and parked in various storage facilities, most of them withdrawals by major incumbent airlines.

In this reality, the startup airlines became the only game in town for the manufacturers, which would otherwise be forced to practically stop production or store new aircraft off the production line.

The traditional alliance between the manufacturer and the major incumbent airlines has shifted quite dramatically, as the manufacturers started focusing on the emerging group of new airlines as a major market opportunity for their new aircraft. The beginning of this trend can be traced to the crucial role that Airtran (ValueJet) played as the major launching airline for the Boeing 717 (MD95), eventually ordering 59 aircraft.

This trend became more apparent and more significant as the competition between Boeing and Airbus over market dominance increased. Boeing captured American Trans Air (ATA) and facilitated a complete fleet change with new-generation Boeing 737 (37 aircraft) and a new extended version of the 757-300 (12 aircraft). ATA has phased out the older aircraft it operated and has changed its business plan to become an important player in the low-cost scheduled market. JetBlue ordered 78 new Airbus A320 aircraft to provide capacity for its startup operation. This is the first time that a startup airline had committed to such a large number of aircraft at such a substantial cost. In 2003 JetBlue ordered an additional

65 aircraft and placed 50 additional options. In Europe, Easy Jet ordered 120 new A319 from Airbus, and negotiated options for additional 120 aircraft. Ryanair ordered 153 737-800s, and negotiated options for an additional 125 aircraft. Ryanair took over another low-fare airline, Buzz, and in fact has challenged Air France's position as the third-largest airline in Europe after British Airways and Lufthansa.

The detailed terms and conditions of new aircraft acquisition agreements are usually unpublished, but the available information points toward major accommodations by the manufacturers in order to attract low-cost airlines to new aircraft. Average new aircraft prices have been slashed dramatically, in some cases perhaps even by almost half list price. Manufacturers have also taken part in maintenance and financing and in the disposition, residual value guaranty, and trade-in of older aircraft that have been replaced by the new aircraft.

It is this unprecedented drive by the manufacturers to sell aircraft by cutting prices and assuming some of the risks of the startup airlines that has fueled the growth of this new type of airline competition. Moreover, since new aircraft require only minimal maintenance cost during their early lives, these airlines enjoy a (temporary) cost advantage over the incumbent airlines that is surely helpful during their initial penetration stage and building of market share. Passengers, in return, get the best-quality aircraft for prices that were simply not conceivable only a few years before.

The question is, however, how long will this last? Will the new airlines be able to generate sufficient market share, and earn enough once the honeymoon period is over?

5.3 Labor Costs

Another important cost advantage of the low-cost airlines is their non-unionized labor and low labor costs. This is an important issue, by some counts the most significant challenge for the struggling major incumbent airlines.

Labor is the largest single category of industry costs. Figure 20 shows that the total labor-related expenditures of the major and national passenger carriers during the second quarter of 2003 were over one-third of the industry's total costs (more than the combined costs of fuel, ownership, interest, insurance, maintenance, materials, landing fees, communications, advertising, and food).[208]

Labor costs have increased consistently since deregulation in spite of the fact that the industry's real yield has dropped (see Figure 21[209] and Figure 18 for labor costs and real yield trends, respectively). Note in particular the increase in labor costs between 1998 and 2002, when revenues dropped significantly. Labor negotiations in the late 1990s and aggressive labor union activity focused on the industry's financial success during the second part of the decade, while ignoring the beginning of a new

[208] Source: Air Transport Association.
[209] Source: Air Transport Association.

revenue crunch. But even in the year 2002 and after the dramatic negative economic impact of September 11, labor costs continued to rise.[210]

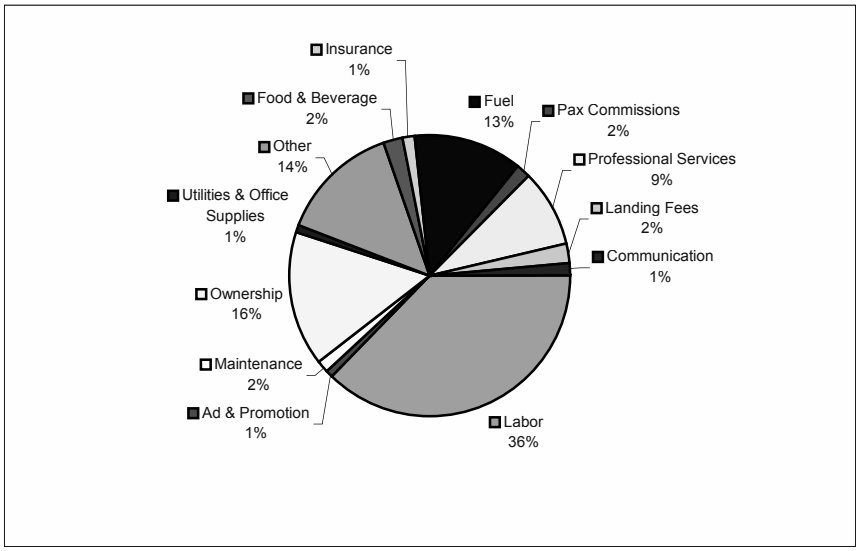

Figure 20. Cost Allocation 2003

Most of the increase in labor costs is attributable to the major incumbent network airlines. Figure 22 shows the rate of increase in labor costs per available seat-mile during 1998-2001. During this time, United increased its labor costs by over 25% and American and Delta by over 20% each.[211]

It is important to mention again that the major incumbents entered deregulation encumbered by certain complex, irreversible, and downward-rigid labor-related contractual and institutional arrangements. For example, labor negotiations were and still are regulated by the Railway Act of 1933.[212] Labor agreements have been renegotiated repeatedly since deregulation, yet labor costs have continued to rise. Airline employees, in fact, are compensated at a level nearly twice the average for all US industries.[213]

[210] During 1998–2002 one strike, ten non-strike work actions, and four presidential interventions occurred.

[211] Source: United Airlines filings in bankruptcy court (calculations based on US DOT Form 41).

[212] For a detailed analysis see GAO (2003).

[213] See BLS National Compensation Survey July 2002. Available on the internet at http://www.bls.gov/ncs/ocs/home.htm#overview.

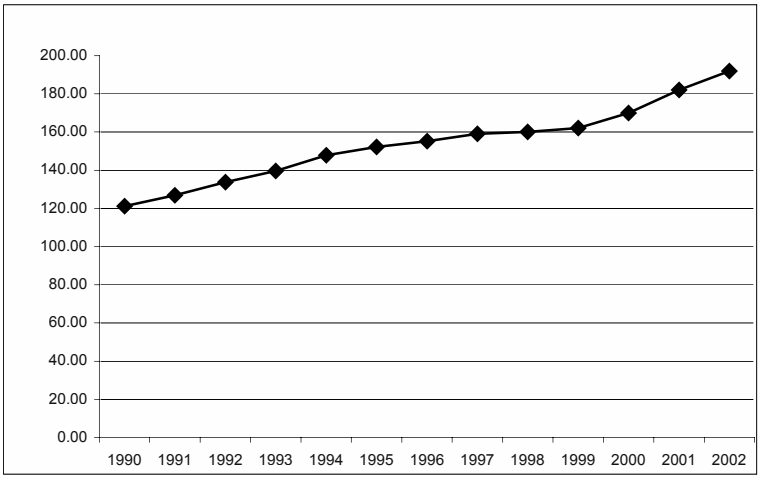

Figure 21. Labor Cost Index

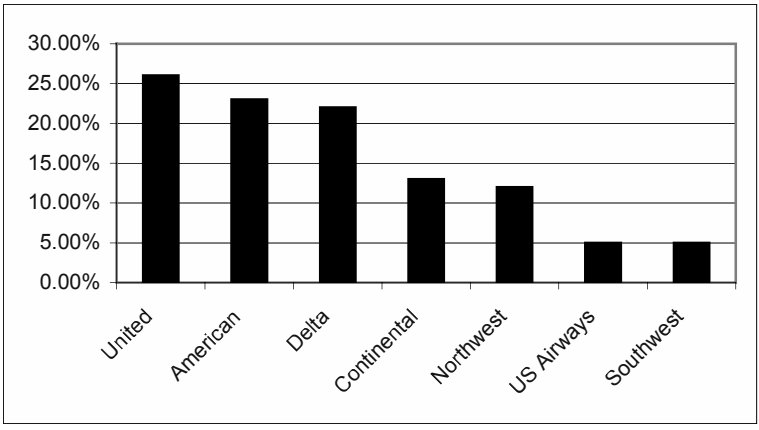

Figure 22. Increase in Labor Cost per Available Seat Mile, 1998-2001

The current labor institutional arrangements and agreements of the incumbent network airlines are complex and far-reaching. They touch upon every aspect of an airline's operation and costs in significant and not always obvious ways. Union representatives are directly involved in and influence most of the airlines' decisions. It is common for labor arrangements to affect a vast spectrum of activities covering, for example, the purchasing of paper clips or the purchase or leasing of aircraft. Labor arrangements affect organizational structures, processes, and procedures such as maintenance programs, aircraft operational manuals, and training. They are rooted in every airline's history and became imbedded in its culture. They include aspects

that not only dictate direct high wages and costly benefits but also impose highly restrictive work rules and organizational procedures that require more employees and higher costs (for example, minimum monthly pay guarantees and vacation overrides). They also impede an airline's strategic freedom to compete in deregulated markets. Labor agreements, for example, restrict the use of smaller and more cost-efficient regional jet aircraft, limit the scope of code-sharing agreements, and prohibit or restrict outsourcing of maintenance and other services to lower-cost vendors.[214]

As previously discussed, the major airlines' strategic move to create complex hub-and-spoke networks was motivated to a large extent by their attempt to average down their high and rigid labor costs. During the 1990s the strategic combination of high-frequency hub operations and price differentiation, in the face of a relatively limited but growing low-cost competition, accommodated such high labor costs. But the drop in high-fare paying passengers and the expansion of low-cost competition starting in the late 1990s posed a serious challenge to the major incumbents.

Low-cost startup airlines pay their mostly non-unionized labor significantly less per seat-mile. In addition, large-scale layoffs by struggling major airlines during the early 2000s provided the low-cost airlines with opportunities to hire experienced and non-unionized labor to accommodate their expansion. Free from historical labor commitments and constraints, the low-cost airlines pay less for employees who work and produce far more.[215] In addition, the new aircraft's maintenance "honeymoon" period, mentioned before, reduces the need for maintenance labor for new startup airlines like JetBlue, for example.

Figure 23 compares labor costs by airline in 2001.[216] The cost differences between the incumbent network airlines and the low-cost airlines are striking. United and American paid their labor more than double the amount paid by JetBlue per seat. They also paid one and a half times the amount paid by the low-cost incumbent Southwest.[217] Continental Airlines has the lowest labor cost among the major incumbent airlines. This was achieved only after aggressive restructuring efforts mostly during its two bankruptcies in 1983 and 1990.

[214] United Airlines Chapter 11 bankruptcy case offers an interesting account of the airline's experience with its labor unions. See, for example, Informational Brief dated December 9, 2002 by United.

[215] Average pay for a United captain, for example, is more than double the pay of a JetBlue captain while the latter spends almost twice the amount of hours in the cockpit.

[216] Source: United Airlines filings in bankruptcy court (calculations based on US DOT Form 41). US Airways reflects pre bankruptcy cost.

[217] The cost differences become even more significant when they are adjusted to stage length. United adjusted cost is 4.75 cents and JetBlue's is 1.95 cents. Southwest is an incumbent low-cost airline and is bound by historical labor commitments that may put it in a disadvantageous position relative to a new startup like JetBlue.

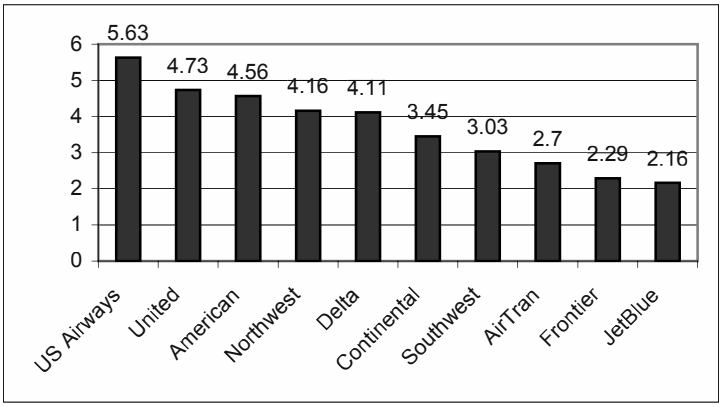

Figure 23. Labor Cost per Available Seat-Mile (cents) 2001

One cannot overestimate the importance of the labor issue for the survivability of the incumbent network airlines and the unfolding industry structure. The challenge in this respect is enormous and involves far more than just cutting wages and benefits. It requires a complete change in a complex web of organizations and processes that had evolved during 40 years of regulation. It is clear that in spite of continuing negotiations and changes, labor issues have not properly adjusted to fit the new reality of the deregulated market. They must be radically changed in order for the major network airlines to survive.

5.4 Network Architecture

Low-cost airlines operate mainly point-to-point routes. The major incumbents operate complex hub-and-spoke networks. Is point-to-point service in general superior, or does it involve less cost than complex hub networks?

It is important to recall, first, the major advantages of operating a complex network system. Assume that an airline (or a regulator) wishes to figure out the least costly structure to connect a given set of nodes (origins and destinations). Hub-and-spoke networks require, in general, fewer connecting flights to service the same set of nodes compared to direct service to the same nodes. For example, in December 2002, Southwest, the sixth-largest airline in the US, served 68 cities in 31 states with 375 aircraft, mostly by linear point-to-point service. Us Airways, the seventh-largest airline in the US, served 177 cities in 38 states plus 23 international cities with 360 aircraft. US Airways operated 15 fewer aircraft in its complex network to serve 132 more cities, which illustrates the advantage of a complex network structure over a linear structure.

Thus, *everything else equal*, a hub-and-spoke network can be a less expensive production alternative to connect the same nodes. The hub-and-spoke network, furthermore, has the advantage of density and scope. This is important, particularly

with respect to nodes that have relatively small city-pair markets. The network structure, in fact, combines passengers originating in various nodes, and channels them through a hub flight to a destination node. Thus, city-pair markets that may not justify a linear direct connection due to a relatively small market size can sustain service through a hub.

Also, adding a node to a hub network has a non-linear system-wide effect, creating many new combinations of service and increasing density. A network structure, however, requires passengers to use connecting flights, which creates bottlenecks and congestion, and requires sufficient hub capacity in order to serve a large network.

Major network airlines offer connections of a wide variety of origins and destinations at high frequencies, by combining complementary legs and increasing aircraft cycles. Integration with regional and international airline through code-share or otherwise further increases the node variety on a global basis. Operating such a network system requires a substantial amount of fixed cost and complex pricing strategies in order to recoup such costs.

Point-to-point competitors usually choose to service a certain market in a certain city-pair. Such a strategy could be called *cherry-picking,* since only certain markets that suit specific operational (primarily aircraft characteristics) and marketing parameters are serviced. In such specific markets, these airlines may have a relative cost or pricing advantage over the incumbents.

We can think of a network airline as a supermarket, offering everything for every taste, and a low-cost airline as a specialty store that concentrates on operating one type of aircraft serving a select market on certain selected legs. A point-to-point operation cannot enjoy the spillover traffic of connecting flights that a hub network enjoys, so it must have a large enough market to provide at least a breakeven load factor and allow for frequent round-trip aircraft operations.

Southwest, for example, implemented its point-to-point strategy by selecting secondary airports, those not usually served by major incumbents, and stimulating demand by relatively low prices. Southwest competed for many years in a general market segment that was also serviced by the major incumbent, but flew to secondary airports and therefore offered a substitute and not equivalent product. Other airlines selected high-density markets, even if served by major incumbents, provided that they had sufficiently large potential markets to support their point-to-point flights.

While the complex network structures have provided the major incumbents economies of scope and enabled their market dominance, such a framework is inherently vulnerable to competitive attack. First, a startup entry may focus on a market niche or a small segment of the network market, and would not have to invest the huge sunk cost involved in being a full-scale competitor, at least during its market penetration period.

Second, price discrimination that facilitates the recouping of joint production fixed costs by a network airline may invite competition in several major ways. The startup might attack the high-paying market segment and offer a competing service at a lower price. It can also compete in the low-paying segment of the market even at

the same price by eliminating the restrictions that the major incumbents impose on this segment in order to differentiate their service.

Third, point-to-point competitors may have marketing and cost advantages in offering non-stop service in city-pairs that are served by a network airline but require a connection in a hub (if the market is large enough).

Thinking in terms of general network architecture principles, we are likely to conclude that complex hub-and-spoke networks are effective and expected to persist as a part of any air transportation system. Direct point-to-point type service has its own particular advantages, and it should be expected to coexist along with complex hub networks when the markets served are sufficiently dense to make such operations profitable.

6. WHAT NEXT?

The major incumbents are challenged by many circumstances today: economic recession, significant security concerns, and new competition that has accumulated enough market share to pose a serious threat. This is the first time since deregulation that such competition is posing a real threat, a threat that is particularly challenging because of the particular environment today.

A few points are worth reiterating in this regard. First, world-recognized major incumbents (United and American) were singled out in the September 11 events, which besides the direct economic impact prompted the notion that perhaps small startups may attract less terrorist attention and therefore may be a safer travel alternative.

Second, as we have noted, the economic recession pushed overall demand down, but in particular demand for business travel, the traditional market served by the major incumbents.

Third, the global economic downturn, terrorist threats, and fears about SARS reduced more than overall demand but particularly the international trips provided only by the major incumbents.

Finally, because of all these trends, domestic low-fare-paying traffic became the major source of industry revenues, and it is this market that the startup low-fare airlines have targeted.

Under these conditions, the major airlines' traditional high-revenue base contracted, and price discrimination lost its previous effectiveness because high-fare payers are hard to find. Thus, the major incumbents had to reposition themselves to attract that market segment that is price-sensitive, which they had heretofore neglected and which is now also subject to meaningful new competition. The majors must not only compete with airlines that serve this market segment at a lower cost, but also generate enough revenue to cover their accumulated high losses *and* the cost of maintaining their large underused capacity and extensive debt. New startups are spared this burden. They are much more fit to compete and to attack the incumbents when the majors are quite vulnerable and hurting already.

Are complex hub network airlines, in fact, doomed to go the way of the dinosaur, as some observers suggest? Will point-to-point airlines eventually dominate the

market? Is the competition we observe now in fact a battle between two competing standards for market dominance? Given the current environment and industry history, which of the airlines in the complex network and point-to-point groups will survive?

How will the market structure evolve? Will the startup airlines stick to point-to-point operation as a long-term strategy, or will they adopt hub network operations? Or a combination of both?

Economists like to imagine a benevolent planner or a regulator that with the help of an understanding of network architecture could design the most efficient manner to connect a given set of nodes, subject to aircraft operational and market characteristics. Will the free market in fact evolve in this direction?

There are many ways the future may unfold, depending on many uncertain factors as well as the specific strategies that players adopt to respond to opportunities and threats. If history is any guide, we may be surprised again. Perhaps an outcome that we have not even thought about, or have believed has only a small likelihood to emerge, will emerge (or maybe not!).

There is no doubt that the startups and the commuter airlines as a group have shown remarkable and perhaps unprecedented success in penetrating the market. This is due, among other things, to aircraft and labor cost advantages, and also to the fact that their market entry coincided with the damage inflicted on the incumbents by the consequences of September 11 and economic recession. Will the startups' successful entry last? What will happen next?

The following are a few important points to consider.

6.1 Strategic Response of the Major Airlines

The major incumbents must respond strategically to the startups' entry. Will their strategic response help them defend their market share or otherwise survive? The majors are obviously struggling to survive and to maintain their dominance. They must adjust to the new reality, and find strategies to reduce their average cost or the cost of serving the market segments where they are threatened, or otherwise increase revenues.

This requires direct cost-cutting by renegotiating labor contracts and debt and lease obligations, and rethinking and redesigning their fleet and network structures and hub operations. They must do this with or without bankruptcy court protection.[218] Moreover, since major incumbents are subject to historical labor, debt, and other contractual costs of maintaining their systems, will they be able to radically cut labor costs? They may be forced to further increase concentration and integration through merger, code-share, or other arrangements that would increase their market share and average their costs down. Increasing market share may compensate for their inherent relative cost disadvantages.

[218] As of this writing, US Airways had just emerged from Chapter 11, and United and Hawaii Airlines had filed for court protection and were struggling to reorganize.

Delta, for example, responded directly to the low-cost competition by establishing its own low-cost point-to-point airline (Song). United followed suit with its version of low-cost operation (Ted). Previous attempts by major incumbents to start low-cost airlines have not been particularly successful. Will this attempt be any different? American decided to face the competition by changing its fleet configuration and competing within its current structure. Will this strategy work any better?

US Airways had reorganized its affairs and reemerged from Chapter 11 bankruptcy as a smaller lower-cost airline. Shortly thereafter it was forced to seek court protection once again. Will the restructured US Airways—still encumbered with debt and expecting to lose for a while—survive? Will United survive bankruptcy? Will any major airline (American?) acquire the struggling United in its quest to increase market share and reduce costs?

The regional airlines have been expanding dramatically. Equipped with new and smaller jet aircraft, they may be better positioned than the majors to compete in a substantial portion of the same market attacked by the startups. Did the regionals overextend their fleets and order too many aircraft prior to the crisis? What role will they play in the competition against the startups?

Hub operations have also changed in response to the new conditions. High-frequency flight schedules during peak demand periods have been spread more evenly throughout the day in an attempt to reduce costs (*rolling hubs*). High-frequency operation during peak demand periods was traditionally believed to be a major strength to hub airlines—a prime quality indicator that distinguished major hub airlines from the competition. It remains to be seen how this sort of development will affect cost and demand.

6.2 Role of the Government.

The government plays an important role through two major mechanisms: antitrust action, and direct financial assistance. It is usually the case that antitrust concerns are assigned less importance during times of financial crisis. In fact, after a relatively long period of indecision, the government approved a marketing integration agreement among Delta, Continental, and Northwest in 2003, an agreement with only a slim chance of approval prior to September 11. Passengers on any of these airlines will be able to integrate frequent flier mileage, which may give these airlines an advantage over startups. Antitrust impact may become very significant if two (or more) struggling major incumbents attempt to merge or if United Airlines, or any major airline for that matter, plans to liquidate and other major airlines might want to acquire its assets.

The distribution of funds from the September 11 financial aid package to airlines has affected their cash flow position and survivability as well. The manner of distribution can directly make or break an airline, and therefore is a target for lobbying and political interest group pressure.

6.3 What Will Happen After the Startup Aircraft Honeymoon?

Part of the cost advantage associated with the startups' acquisition and operation of new aircraft is temporary. In not too many years, very expensive maintenance work will be required on these planes. The startups may also face increased lease and debt payments after the end of the initial financial accommodation period provided by the manufacturers.

How long will this honeymoon last? What will happen after the honeymoon period? Will the market share accumulated during the honeymoon be enough to keep operations profitable with increasing costs? Will the future average cost of the startup airlines still be lower than the average cost of the major incumbents? Fares may be forced up with increasing costs; will low-paying passengers continue to be attracted to startup airlines even if fares rise?

6.4 The Next Ad Hoc Coalition

The aircraft manufacturers' strategy has been a very important engine driving the evolution of the industry. I argued in previous chapters that during the 1980s and 1990s the manufacturers and major incumbent network airlines formed an ad hoc coalition that impeded startup entry. In this chapter I argued that in the early 2000s the economic crisis have forced major incumbents to reduce fleet capacity and therefore eliminated them, for a while, from the market for new aircraft. Driven by high fixed costs and commitments to labor, and competing over market share the manufacturers have effected the unprecedented dramatic expansion of a new breed of low-cost airlines using new aircraft. In this go around the manufacturers, in fact, hurt the major incumbent airlines—their traditional buyer group. But what will happen next?

The low-cost startup airlines placed a very large number of orders and options for new aircraft acquisition encouraging very optimistic expectation for expansion and overreaction to the potential success of the new-low cost business model. At the same time, the major incumbents are restructuring, regrouping, and repositioning themselves for the new market environment. It is expected that a smaller (but surely leaner) group of major incumbents would emerge from the crisis ready to the next round. And they would most probably be the next major potential buyers for new aircraft. The major airlines are frustrated, perhaps even feeling betrayed by the manufacturers' alliance with the startup airlines. And it is very likely that they would push the manufacturers to further cut the price of new aircraft in the next go-around so that they are better fit for the battle.

It is also interesting to see if the fierce competition between Boeing and Airbus in the long-range and international markets (with their new 7E7 and A380 aircraft) would create a new breed of low-cost startup airlines in theses markets as well. Such startups, if created, might further hurt the major incumbents.

6.5 Post-Penetration Strategies

What will the startups' objective and strategic moves be, once they have established themselves and gained initial market share? One of the striking aspects of the Southwest Airlines success is that it has stuck for more than two decades to the same general strategy of mostly expanding its point-to-point operation with one type of aircraft into carefully selected domestic cities.[219] Will Southwest continue this strategy?

JetBlue decided unexpectedly to expand regionally with smaller regional jets. How will this strategy evolve? Will JetBlue expand its operations across the Atlantic? Its location at New York's JFK Airport obviously provides it interesting international opportunities.

One of the interesting opportunities that may unfold is expansion through mergers and takeovers of other airlines or buying assets from other airlines. Low-cost airlines may be able to acquire assets from other major airlines in trouble or facing liquidation, if such sales occur. Perhaps paradoxically—and because of the stock market's peculiarity—startups that become investors' favorites may end up meriting a high market valuation because of very optimistic expectations of future performance, which could facilitate takeovers through acquisition of shares.

In early 2003, Southwest's market valuation was over three times the valuation of the largest five major airlines combined. This perhaps reflects investor community confidence in the continuing success of this airline along with a conviction that airlines that survive the current crisis will prosper in the future.

The stock market also accepted JetBlue very enthusiastically, speculating that it was the next industry's success story. In the spring of 2003, with just over two years in business and operating 40 aircraft, JetBlue's market valuation was already over twice the valuation of American Airlines and higher than American and United combined. Only time will tell whether the market has overreacted or not. Obviously such a significant market valuation could provide JetBlue or any other startup with the potential power to takeover a major incumbent airline or substantial part of its assets if it adopts such a strategy. Will JetBlue pursue a strategy like this?

Will major network airlines go the way of the dinosaur? Probably not. The point-to-point airlines are expected to keep on taking advantage of market opportunities and continue to grow. Some will be successful, and some may not. The major network airlines may be forced to further consolidate and integrate in order to reduce average fixed costs and reposition themselves to withstand the new startups' threats. There will be losers in both camps, and most probably a very small number of winners.

[219] With the acquisition of Morris Air as only a relatively small divergence.