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***A REVIEW OF HISTORY, STRUCTURE, AND COMPETITION  
IN THE U.S. AIRLINE INDUSTRY***

Gerald N. Cook

The airline industry has evolved in two profoundly different eras, first under the protective hand of federal economic regulation and, following the Airline Deregulation Act of 1978, subjected to the full force of the free market. This history has proved a fertile testing ground for economic theories and predictions of market behavior. This paper first provides a brief history of the domestic airline industry under regulation. Next, the post-deregulation transformation is reviewed. Attention is then focused on a survey of the extensive airline economic literature. Finally, several current trends that promise to further shape the industry are examined.

**REGULATORY HISTORY**

**Birth of the Airline Industry**

The U.S. airline industry was born and reared in a time of regulation and subsidy. In 1918, the Post Office began administering airmail routes operated by U.S. Army pilots and aircraft. A rudimentary transcontinental infrastructure of navigational lights and airfields developed to support the nascent airmail service. In 1925, Congress passed the Contract Air Mail Act, popularly known as the Kelly Act after its principal congressional sponsor, authorizing the Post Office to award routes and payments to private air carriers. Over the following decade, cost overruns, inefficiencies, and political scandal led to frequent and somewhat chaotic changes in the system of route awards and subsidies, even including a brief and disastrous return to all-Army service in 1934. Despite the turbulence of the period, the "Big Four" airlines, United, American, Trans World, and Eastern, trace their origins to this time (Bailey, Graham, & Kaplan, 1985; Heppenheimer, 1995; Meyer & Oster, 1981; Petzinger, 1995). Although the others survive, Eastern eventually liquidated following industry deregulation.

Limited aircraft performance and spartan accommodations doomed most early attempts at passenger service offered in conjunction with airmail delivery. Introduction of new twin-engine airplanes, most notably the Douglas DC-2 and later the ubiquitous DC-3, enabled the fledgling airlines to offer reliable passenger service with an acceptable level of comfort. With the

growth of passenger service, airline regulation was transferred to the Interstate Commerce Commission (ICC) in 1935. The ICC's governance, however, proved unenlightened and disruptive as a revised policy caused many carriers to bid below cost for new route awards, debilitating the industry (Button, 1991).

The Civil Aeronautics Act of 1938 transferred regulatory authority over air commerce to the Civil Aviation Authority, reorganized two years later as the Civil Aeronautics Board (CAB). In part a reaction to the Great Depression, the 1938 Act directed the CAB to enact policies to promote and develop an economical, safe, and efficient air transportation system free of "unfair or destructive competitive practices" (Meyer & Oster, 1981, p. 18). This mandate provided the basis for CAB regulatory actions over the next 40 years. Though certainly successful and probably necessary for the early development of the airline industry and the air transportation infrastructure, the CAB's aversion to competition eventually led to its demise.

**Four Decades of Regulation under the CAB**

World War II supported a period of sustained profitability as much of the airline fleet was diverted to military transport. At the war's end, hundreds of surplus DC-3's and DC-4's entered airline service. New non-scheduled airlines, followed shortly by the trunk carriers, introduced high-density seating and coach fares, foreshadowing the development of today's complex discount fare system. Low fares spurred demand; traffic doubled over a five-year period (Heppenheimer, 1995).

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Also with the conclusion of the war, the CAB responded to political pressure for more local air service by awarding certificates and routes to newly founded local service airlines (LSA). These carriers were to provide connections from smaller cities to those destinations served by the trunk carriers. The CAB was careful to prevent the LSA's from competing directly with the trunks, generally requiring an intermediate stop on any route connecting cities already served by established carriers (Button, 1991).

During the 1950's and 1960's, subsidization of most local service and many trunk routes continued. Local subsidy cost, exacerbated by fares deliberately set below marginal cost in accordance with the CAB formula, escalated rapidly as the LSA's added routes and replaced their original DC-3 aircraft with larger equipment. In an effort to reduce subsidy costs, the CAB at first shifted some low-density trunk routes to the LSA's. When this approach failed, longer and potentially more profitable routes, often in direct competition with the trunk carriers, were awarded (Bailey, Graham, & Kaplan, 1985). Despite this overlap of local service and trunk carrier routes, the CAB largely maintained its vision of a bi-level industry. Trunk airlines served long-distance routes between major cities and local-service carriers provided connecting service from smaller cities to trunk destinations. Consequently, many itineraries required a change of airlines. Because of poorly coordinated flight schedules, significant delays awaiting a connecting flight were common.

Despite these problems, the industry grew rapidly, enjoying more than a tenfold growth in passengers between 1950 and 1970. Technological advances first embodied in the long-range DC-6 and Constellation aircraft and then in the first-generation commercial jet transports provided steady improvements in productivity. Airfares, though high, remained nominally stable but declined in real terms throughout the period (Bailey, Graham, & Kaplan, 1985). High fares, however, limited air travel to business and affluent passengers (Petzinger, 1995).

### **Calls for Change**

The impetus for regulatory change first appeared in the early 1970's. Prohibited from competing on fares and

routes, carriers responded by increasing flight frequency, lowering seating density, and adding ever more extravagant in-flight service. Anticipating continued rapid traffic growth that accompanied the introduction of jet aircraft, the major carriers placed new wide-body aircraft in service, exacerbating existing overcapacity. Load factors fell from 70 percent in 1950 to 50 percent by 1970. With the transition to jet aircraft complete, productivity gains that had cushioned the economic consequences of falling load factors slowed. The industry's financial health weakened.

The CAB responded to the deteriorating financial conditions by increasing its regulatory interventions. In addition to the ongoing denial of new carrier applications, it imposed a new route moratorium on existing carriers, approved a 20 percent fare increase in 1974, and sanctioned capacity limitation agreements among the major carriers (Borenstein, 1992; Button, 1991). These actions raised alarm outside the CAB, resulting in a consensus in government and academia that regulatory distortions imposed unacceptable burdens on the economy and society (Levine, 1987).

Sensing a winning issue, Senator Edward Kennedy held congressional hearings in 1975 sharply critical of CAB policies. Studies comparing intrastate airlines operating outside CAB control with the trunk carriers projected fares 50 percent to 70 percent lower if the industry was deregulated.

### **Deregulation Act**

In response to the criticism, the CAB reversed its policies, beginning with the approval of new route applications. In 1977, it consented to American Airlines' request for Super Saver discounts some 45 percent below existing coach fares. When American's traffic swelled as much as 60 percent in response, the solution to overcapacity seemed at hand. Other carriers quickly filed and received CAB approval for similar discounts. De facto deregulation was under way (Meyer & Oster, 1981).

In 1978, now with the active encouragement of new CAB Chairman Alfred Kahn, Congress passed the Airline Deregulation Act (ADA). It mandated that the CAB phase out its route approval authority over three years, the regulation of fares over five, and pass its remaining functions to the Department of Transportation. The CAB

ceased operation at the end of 1984 (Bailey, Graham, & Kaplan, 1985).

#### **POST-DEREGULATION EVOLUTION**

Proponents of deregulation unanimously predicted improved consumer welfare with the elimination of price and entry control. Regulation, it was argued, caused carriers to resort to non-price competition, which led directly to the overcapacity and low-load factors of the 1970's. Less agreement existed on the likely effect of deregulation on industry structure. Asserting that the industry benefits from little or no returns to scale, some observers felt equilibrium would lead to many new carriers. Conversely, others contended that without regulatory restraint large carriers would crush any daring new entrants with an attendant growth in concentration (Borenstein, 1992; Gaynor & Trapani, 1994). Within the industry, most feared that the subsequent upheaval, though unpredictable, would prove extremely painful. History offers some support for all positions.

##### **Growth and Consolidation**

The years immediately following deregulation were marked by rapid expansion of existing carriers, including entry into former trunk routes by local service and intrastate airlines. New-entrant carriers proliferated. Bates (1996) lists 24 jet carriers that started flying between the passage of the ADA and 1985, People Express being perhaps the best known. Most provided basic air transportation but, in confirmation of the deregulation proponents, offered bargain fares as well.

The difficulties of the early 1980's, however, including intense competition, the oil embargo, the air traffic controllers' strike, and recession, reversed the trend. By 1988, consolidation, acquisition, and bankruptcy reduced the 24 early post-deregulation airlines to just two, Midwest Express and America West. Nor were major carriers exempted from the turmoil as Braniff, Eastern, and fabled Pan American World Airways succumbed in bankruptcy.

By the end of the decade, the percent of traffic carried by the largest airlines returned to pre-ADA levels. The eight biggest carriers accounted for 78 percent of the total traffic in both 1978 and 1988. System expansion, however, boosted the number of routes each carrier served from approximately 200 to nearly 500 so that

route level concentration actually declined. In a continuation of past trends, traffic more than doubled (Borenstein, 1992; Button, 1991; Evans & Kessides, 1993b).

##### **Structural and Marketing Changes**

Many aspects of the industry transformation caught observers by surprise. The deregulation debate focused on fare levels. Proponents pointed to intrastate carriers PSA and Southwest as exemplar airlines combining a simple fare structure with low peak and off-peak pricing and a linear route system. The result is vastly different. Alfred Kahn (1988), Michael Levine (1987), and others list several "surprising" outcomes. Among these are: (a) the dominance of hub-and-spoke route systems resulting from internal growth, merger, and vertical integration; (b) the pervasive role of computer reservations systems (CRS's); (c) an exceedingly complex fare structure controlled by sophisticated yield management software; (d) rebate programs of frequent flier awards and travel agency override commissions; and (e) the persistence of predation and high casualty rate among new airline entrants. These developments led Levine to conclude that large carriers exercise a degree of market power which, despite relative ease of entry, new carriers cannot overcome.

##### **Hub-and-Spoke Systems**

Largely unanticipated in the deregulation debate but arguably the most important change is the development of the hub-and-spoke route system (Bailey, Graham, & Kaplan, 1985; Kahn, 1988; Levine, 1987). This design routes flights from the origin to a major intermediate "hub" city where passengers change planes for a continuing flight to their destination. Because of the large number of city pairs connected through the hub, even smaller cities generate enough traffic to warrant frequent flights with jet aircraft. Economies arise because higher traffic density allows the use of more efficient aircraft at higher load factors (Brueckner, Dyer, & Spiller, 1992; Caves, Christensen, & Tretheway, 1984). At the other extreme of route structure design, cities are linked in serial fashion, a common structure under CAB regulation. But with this structure, only large city pairs generate sufficient traffic to justify jet service.

Freed from restrictions on merger/acquisition and

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route expansion following the passage of the ADA, major carriers moved quickly to develop extensive hub-spoke networks. In addition to internal expansion, route systems grew through acquisition of former local service carriers. Northwest merged with Republic, TWA merged with Ozark, Delta acquired Western, American acquired Air California, USAir acquired PSA and merged with Piedmont, and Continental grew with the additions of Frontier and People Express. To serve smaller cities near the hub, airlines either acquired or entered into marketing agreements with commuter airlines principally operating turbopropeller aircraft. These agreements typically involve code-sharing in which the commuter flights are listed under the major carrier's designation in the CRS's, frequently leaving passengers unaware of the change in level of service. The American Airlines' Eagle network is the largest example.

Every major airline with the exception of Southwest relies on a hub-and-spoke system of one or more hub cities. Although carriers concentrate in specific geographical areas, the hub system allows the largest carriers to compete in nearly every major U.S. market. Each airline attempts to capture the passenger from origin to destination. Dominance at hub airports has allowed some carriers to exercise significant control over gates and other airport facilities, a power which is occasionally used to restrict access by new entrants (Levine, 1987).

### Computer Reservations Systems

The requirement to store, retrieve, and process data on thousands of daily flights, many more connections, and hundred of thousands of passengers lends itself naturally to the computer application. Airlines were among the first to employ the technology (Petzinger, 1995). Perhaps less obvious were the marketing advantages of leasing these computer reservations systems to travel agents. The four major CRS's, each owned by a single or small consortium of airlines, list virtually all commercial flights, allowing an individual travel agent to use just one system. American's Sabre CRS has the highest penetration; however, the geographically predominant carrier generally captures most of the local agency market (Levine, 1987). Booking charges for reservations made on the systems for competitors' flights

provide additional ownership returns.

From the start, reservation systems stirred controversy. Early flight displays were highly biased in favor of the owner airline, listing its flights first. American's egregious use of this marketing tactic brought protests by other carriers and eventual regulatory restriction on display bias (Petzinger, 1995). As a byproduct of the CRS, all carriers gain instant access to competitors' continually changing fares. Allegations that the system provided a means of signaling proposed fare changes and subtle collusion prompted regulations restricting advance notice of pricing changes.

### Complex Fares

Travel demand varies by time of day, day of the week, and season. If sufficient capacity exists to meet peak demand, then seats will go unsold on off-peak flights. Discount fares can smooth traffic patterns by shifting less time-sensitive passengers to off-peak flights and inducing price-sensitive consumers to travel. To avoid diluting all fares, however, advance purchase, Saturday stay, and other restrictions on discount fares attempt to segregate passengers by willingness to pay. Though some cost justification exists for these different fare levels, classic price discrimination motivates most of the fare dispersion (Borenstein & Rose, 1994; Oum, Zhang, & Zhang, 1993).

American's original Super Saver discount fare and its competitors' imitations have grown over the last two decades into a bewilderingly complex array of discount fares. To extract the maximum revenue potential, yield management software controls the availability of fare levels for each flight on a real-time basis. Beginning with historical booking data, the yield management software continuously monitors the booking progress of each flight as the departure date approaches, adjusting the availability of discount fares in an attempt to maximize revenue (Weatherford & Bodily, 1992). As ability to manage fares and discriminate among passengers on willingness to pay improved, airline marketers widened the spread between high and low fares much to the consternation and disadvantage of business travelers who typically pay the highest prices (Evans & Kessides, 1993b).

The use and sophistication of yield management

software varies considerably among carriers. The latest advances attempt to maximize revenue across the airline's entire route network rather than by flight segment as earlier versions have done. TWA, in contrast, only recently installed its first system. Borenstein and Rose (1994) provide some empirical evidence that airlines with the best systems extract higher yields.

#### **Rebates**

Airlines employ a somewhat less sophisticated device, indelicately but accurately termed kickbacks, to instill brand loyalty. Frequent flier programs (FFP) provide rewards, generally free travel, to passengers based on a scale of miles flown. Travel agency override commissions (TACO) represent the travel agency analog to FFP. Agencies typically receive a higher commission on sales above a set monthly minimum. The CRS's provide reliable sales data necessary to administer these override commissions.

#### **Predation**

As Levine (1987), the one-time president of People Express, points out, the evolution of structure and pricing methods leads to economies of scope and density benefiting the largest carriers (scope refers to the extent of the route system while density is the level of traffic generated on the system). American's Super Saver fares were, in part, a response to low-fare charter operators who diverted leisure travelers from American and other scheduled carriers (Bailey, Graham, & Kaplan, 1985). Later, discount fares administered by yield management systems allowed the largest carriers to better the fares of low-cost, post-deregulation new entrants while simultaneously charging much higher prices to less price-sensitive passengers (Evans & Kessides, 1993b). Carriers with extensive hub-and-spoke systems can aggressively meet the competitive threat of new entrants in limited markets before they establish a defensible route system.

FFP and TACO both benefit the predominant carrier in a geographical market. Each draws its power by exploiting principal-agent effects that arise when the agent encounters incentives in conflict with the best interests of the purchaser. Business travelers, the primary beneficiaries of the FFP, tend to choose the airline with the most extensive service in order to enhance their frequent flier awards even if this choice is not the most

cost-effective travel option (Nako, 1992). Similarly, travel agents will book most flights on the largest carrier in their area to profit from override commissions. Booking on another carrier disproportionately decreases override commissions because the reward system is non-linear. If the fare on a competitor is less, generally the circumstance if the competitor is a new entrant, the agent also earns a smaller regular commission. To compete, new entrant and smaller carriers often find they must offer a higher percentage commission than larger carriers. Other marketing advantages also accrue to carriers with concentration in a market. Large carriers spread advertising costs over more product. Including many destinations in a newspaper ad, for example, is no more costly than advertising a few (Borenstein, 1991).

Many casualties of deregulation were certainly victims of their own mismanagement (Bailey, 1992). Nonetheless, the low operating costs of new entrants have generally proved inadequate weapons to breach the barriers of establishing initial customer recognition and acceptance compounded by the competitive advantages of scope and density enjoyed by large incumbents.

#### **Economic Research**

The airline industry has long been the subject of concerted economic research. During the decades of CAB regulation, Board economists attempted to devise and implement policies to control the industry in the public interest, a pursuit that required extensive market data. The Board consequently required all airlines to provide standardized data on costs and traffic. Following deregulation, economists were presented with a rare opportunity to study the transition from strict regulatory control of product and pricing to relatively unimpeded competition. For the purpose of review, the literature is divided into studies of (a) effects on consumer welfare, (b) evidence of contestability, and (c) concentration and market power.

#### **Consumer Welfare**

Widespread consensus exists that deregulation has improved consumer welfare. The difficulty in estimating the actual gains stems first from determining the level of service and fares that would have existed had regulation continued (lack of a control group) and, second, from measuring simultaneous changes in price and quality

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(Gaynor & Trapani, 1994).

Economists believed consumers would primarily benefit from lower airfares with estimates ranging from 2.7 to 6.6 billion dollars annually. Airfares have dropped dramatically but, as noted earlier, are far more complex and discriminatory than predicted. Business travelers have generally been excluded from otherwise available discounts. In his survey of economic deregulation predictions and results, Winston (1993) estimates the consumer gains from lower prices at \$6.5 billion but deducts \$3.0 billion for attendant fare restrictions leaving a net of \$3.5 billion annually (in 1990 dollars).

Though complaints about the deterioration in the quality of air travel are common, the development of hub and spoke networks greatly multiplied the frequency of available flights in most markets. Although leisure travelers have been the primary beneficiaries of airfare discounts, higher frequency serves the business traveler. Adjusting for some gain in travel time through the hub, Winston (1993) places the net gain at \$7.5 billion. Consumer welfare gains from reduced fares and augmented service total some \$11 billion annually.

### Contestability

Proponents argued that a deregulated airline market would somehow approximate the ideal of perfect competition. A perfectly competitive market is characterized by (a) a large number of firms, the output of any one of which is too small to effect price; (b) homogeneous product; (c) costless price information; and (d) unimpeded entry and exit. Although most airline markets naturally support only a small number of competitors and differ markedly from the next two requirements as well, faith was placed in the supposed ease of entry and exit to discipline the market. Airline assets, it was argued, are highly mobile and few costs are sunk in entering and exiting a market. Therefore, high prices (economic rents) in a market encourage new entrant competition (Bailey & Baumol, 1984; Borenstein, 1992).

The Theory of Contestable Markets, formalized in 1982, sets forth the conditions under which natural monopolies would approach the efficient pricing and asset allocation conditions of perfect competition. The theory requires the availability of potential entrants,

freedom of entry, and costless exit so that any entry costs can be recovered. Under these conditions, the threat of entry disciplines the pricing of incumbent carriers (Bailey & Baumol, 1984).

Perhaps not surprisingly, the evidence on the efficacy of contestability is poor. Aircraft mobility does not translate to free and costless entry and exit. Acquiring facilities and support equipment, hiring or transferring personnel, advertising new service, and, most importantly, building traffic in a new market requires time and money. When an incumbent can immediately adjust fares to meet new competition, there is little incentive to respond in advance. Several studies have shown that only actual competition significantly lowers prices (Bailey, Graham, & Kaplan, 1985; Borenstein, 1989, 1990, 1992; Evans & Kessides, 1993b; Joesch & Zick, 1994; Whinston & Collins, 1992). Although estimates vary widely among studies, Borenstein (1992) estimates prices in 1990 on routes with two competitors averaged 8 percent less than monopoly routes; a third competitor produced another 8 percent drop.

### Concentration and Market Power

As a consequence of the growth of the hub-and-spoke networks, the airline maintaining a hub provides the most service and carries the highest percentage of local traffic (Borenstein, 1991). Many studies confirm this concentration confers a degree of market power that raises local fares at the hub by as much as 20 percent. Much of this premium results from higher fares paid by business passengers traveling on the hub carrier (Berry, 1990; Borenstein, 1989, 1990; Evans & Kessides, 1993a; Peteraf & Reed, 1994). Reasons for this seemingly anti-competitive behavior have been debated. Critics conclude that dominant carriers at individual hub airports exercise market power through their CRS's, FFP, TACO's, and control of airport facilities that blocks entry or expansion of rivals. Other contend that passengers willingly pay a premium for the frequency and quality of service a dominant hub carrier provides (Berry, 1990).

The results of two controversial airline mergers that concluded in 1986 -- Northwest's merger with Republic and TWA's purchase of Ozark -- provided ideal tests of market power. Both mergers significantly increased hub airport concentrations and reduced competition on routes

where the consolidated carriers once competed. Fares at Minneapolis-St. Paul, home of Northwest, rose substantially following the merger. At St. Louis, in contrast, TWA's post-acquisition fares showed little change relative to the industry and remained near the national average. TWA's local fares, however, remained higher than its competitors (Borenstein, 1990).

The failures and consolidations of the mid-1980's and evidence of localized market power at hub airports raised congressional ire and even short-lived calls for re-regulation (Morrison & Winston, 1990). Yet a decline in the number of large national carriers does not translate into greater concentration at the route level. In fact, the growth of the large hub-and-spoke networks provided for more competition in most longer markets which are serviced across several competing hubs. Brueckner, Dyer, and Spiller (1992) show that network growth reduces fares in city pair markets connected through the hub.

#### EMERGING ISSUES

Stability and equilibrium do not yet reign in the domestic airline industry. Despite the well-known risks of forecasting, several recent developments seem likely to shape the industry.

##### Role of the Travel Agent

Travel agents provide about 80 percent of airline reservation and ticket sales. At an average of 10 percent of ticket price, commissions provide an attractive target for cost savings. Last year most major carriers engaged in a direct assault by capping commissions at \$50 per ticket. Subsequent defections leave the result in question. All carriers attempt to encourage direct bookings through owned sales offices, ticket by mail, and other marketing programs; nonetheless, most carriers support and encourage sales through the agency network. A few, however, attempt to bypass the agencies entirely. Southwest's flights are listed in the CRS's but agents must book flights directly with Southwest. Before its tragic crash, ValuJet supported its rapid growth primarily through direct marketing with little agency support.

High information costs generated by thousands of constantly changing fares and restrictions as well as the requirement for a hard-copy ticket have, to this point, allowed the travel agency industry to dominate the retail market channels. This position is under attack by recent

industry initiatives. Ticketless travel, first introduced by Morris Air (now acquired by Southwest), is spreading across the industry and receiving growing customer acceptance. Reno Air recently announced an agreement with Ticketmaster for sales in the Los Angeles basin. Ticketmaster will book directly into Reno Air's reservation system. Finally, direct passenger access to schedules, fares, and reservations through online services may represent the greatest threat to the travel agent as consumers invade the agents' previously exclusive domain (Ott, 1995; Underwood, 1995).

The outcome of these changes is ambiguous. A restructuring of sales distribution with less travel agency involvement offers significant savings potential for major carriers, eroding some of the cost advantage of their smaller rivals. On the other hand, improvements in passenger access to schedules and fares would benefit smaller airlines.

##### Low-Cost Carriers

Southwest Airlines continues to expand its low-frills, low-fare service, most recently with service from existing markets in the Midwest and Northeast to Florida. Southwest's growth, customer acceptance, and consistent profitability have attracted the adulation, envy, and strategic attention of every segment of the industry. United's West Coast Shuttle represents the most significant effort to defend markets with service designed specifically to compete with Southwest. Carefully planned and well-financed, the Shuttle at first met with limited success, having to withdraw from some initial markets (McCartney & McCarthy, 1996). More recent reports show stronger traffic. Although the West Coast markets will remain intensely competitive, nothing on the horizon would seem to limit Southwest's ultimate expansion to the entire domestic market.

The last few years also have witnessed a resurgence of low-cost, new-entrant carriers reminiscent of the immediate post-deregulation period. A recent Department of Transportation study concludes that consumers save some \$4 billion annually from this renewed competition covering routes that account for 37 percent of domestic passenger traffic (Gruley & McCartney, 1995). Frequent comparison with Southwest masks the diverse marketing strategies employed by these



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newest entrants. Unlike Southwest, most operate hub-and-spoke systems. Leading examples include Reno Air, Midway, Western Pacific, and, before its June grounding, highly profitable, rapidly expanding ValuJet. Reno Air and Midway operate on opposite coasts in markets abandoned by American. Each provides traditional full-service with CRS listing, reservations that include advanced seat assignment, and interline ticketing and baggage with other carriers. AirTran offers a different example with its low-frequency, low-fare service between smaller Midwest and Northeast markets to Orlando. In its Southeast and Florida routes, Air South, in contrast, attempted to replicate Southwest's linear, high-frequency, no-frills service.

Encouraged by the success of ValuJet's initial public stock offering, Frontier, Western Pacific, and Vanguard also have gone public, raising funds that ensure at least short-term survival. While the long-term prospects for Reno Air seem assured, most new carriers struggle. Air South, initially supported with ample initial public financing from South Carolina, failed to develop a profitable level of traffic. This spring, Air South changed to a "hub bypass" strategy by linking New York with mid-sized Southeast cities. Frontier largely abandoned its early emphasis of linking Denver to markets in the northern mountain and plains states and now concentrates on east/west markets across its Denver hub. MarkAir entered bankruptcy and ceased operation in the fall of 1995 (Alexander, 1996). The publicity following ValuJet's May crash and the FAA investigation that led to its grounding on June 17 heightened concerns for the viability of the current wave of low-cost carriers.

No matter the outcome for individual new-entrant carriers, low-cost carriers promise to fulfill the predictions of deregulation proponents by providing low-fare air travel alternatives. As a result, major old-line carriers will face continuing pressure to lower costs, particularly in short-haul markets that connect to their hub cities. Routes once served by the major airlines but now entrusted to their commuter subsidiaries operating turboprop aircraft seem particularly vulnerable. The commuters have responded by adding pure jet aircraft to their inventory. On the other hand, American and Delta, following United's lead, are in discussions with their

pilots aimed at forming effective, low-cost competitive service. Which carriers eventually succeed in serving these markets is an open question (Bender, 1995).

In long-haul routes, the major carriers appear better positioned to compete. These markets are hardly immune to competition, however. Western Pacific, after less than a year in business, operates a coast-to-coast route system through its hub in Colorado Springs. Southwest has on order new 737 models well-suited for long, thin routes. And Pan American World Airways, perhaps the best known name in aviation history, has announced plans to resurrect itself as a low-cost carrier with non-stop, coast-to-coast domestic service.

### CONCLUSION

For 40 years before 1978, the Civil Aeronautics Board protected the domestic airline industry from the vagaries of the free market, controlling entry and exit, awarding routes, and dictating price by formula. Prices remained uniform, simple, stable, and high. Rare corporate business failures resulted in CAB-sanctioned acquisition by a stronger airline. Unionized labor wages rose above comparable levels in other industries. Inefficiencies, particularly low-load factors, resulted from non-price competition in service frequency and in-flight amenities. During the regulated era, the industry matured to replace rail as the predominant mode of public intercity transportation.

The Airline Deregulation Act of 1978 unleashed the full power of market forces and transformed many of the fundamental characteristics of the industry. Expansive hub-and-spoke delivery systems, complex pricing schemes, hub airport dominance by a single carrier, and brand loyalty-inducing devices did not exist in the regulated environment. Almost 20 years after the ADA, it would seem that all results should be fully known and, indeed, the vision of the proponents of deregulation has been largely vindicated. Consumers in general have benefited but not without great cost to many within the industry who endured the transition. Although the pace of change has slowed, evolution continues, shaped by yet another wave of new entrant carriers and by new information and marketing technology that promise to reduce the role of the travel agent. □

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