AIR TRANSPORTATION DEREGULATION

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Introduction

Air passenger deregulation was driven in no small measure by purveyors of ideas. Academics identified the regulation of the airline industry as a candidate for reform. They were able to show that air-passenger fares were lower by half in states with little regulation. An academic political entrepreneur was influential in designing hearings in 1975 that made the regulation issue visible and opened a policy window for reform. A mediagenic scholar, who was both intellectually powerful and charismatic, led administrative reform at the Civil Aeronautics Board (CAB) in 1977 and 1978, and provided confidence in airline deregulation, which was signed into law on October 28, 1978 (Public Law 95-504). The reform issue was framed as both providing the consumer of air travel with lower fares and freeing business from the "dead hand of regulation". The poster child of the success of air-passenger deregulation has been Southwest Airlines. Southwest, a low cost carrier, has provided the impetus for lower consumer prices, while providing a model of business success. Its market value has grown to $10.52 billion in 2007 compared to $5.99 billion for American and $5.81 billion for United.

Air-cargo deregulation was signed into law on November 9, 1977 (Public Law 95-163), a year prior to the passage of air-passenger deregulation. The (passenger and cargo) reform bill had stalled due to interest group concerns on the air-passenger side. Passenger carriers, who provided air cargo services in the belly of their planes, were focused on influencing the pace and direction of air-passenger reform and were silent on air-cargo reform. In contrast, air-cargo deregulation was supported by the four publicly traded air-cargo airlines: Federal Express, Airlift, Seaboard and Tiger. Moreover, the air-cargo bill proposed to make this one of the few industries from which all economic controls would be removed. Therefore, it was instructive for the larger air-passenger reform that followed the next year. Federal Express, whose operations had been limited to small aircraft, has innovated with its overnight express service to become a shipping giant, handling more than six million packages a day across the world, and with revenues growing to over $22 billion in 2001. The express segment has filled a need for transporting high-priority items for all economic sectors: commercial, government and consumer.

It is hard to overemphasize how important deregulation has been. Congress moved methodically to reform regulation across many infrastructure industries, such as trucking, railroads, telecommunications, cable television, gas pipelines, stock brokerage, banking, natural gas, and utilities. Just as the regulatory movement of the 1930s reflected the view that market failure was pervasive, so the deregulation movement of the late 1970s and early 1980s reflected the view that economic regulation of prices and entry was a government failure, generating misallocations and inefficiencies. In markets where universal service had been achieved, markets, not regulators, would be better allocators of society's resources. Deregulation enabled the birth of

new industries, such as overnight shipping, and increased the flexibility of existing industries to remake themselves.

Air-Passenger Regulation as a Candidate for Reform

The Hoover administration bid out a system of routes for private air mail carriage in the late 1920s. Route authority was awarded along linear systems that followed major railroad tracks, with United Airlines granted the east-west route through Chicago, Trans World Airlines the east-west route through St. Louis, and so forth. The Civil Aeronautics Board (CAB) was established in 1938 and its entry policies reflected this pattern of division of the market into systems. Major dense markets were reserved for trunk carriers. The CAB selected among these carriers for new nonstop services or for first competitive service. Over the years, the CAB rejected scores of applications to start new airlines to serve these routes. The local service airlines provided subsidized service to smaller communities. They were restricted to nonoverlapping regions of the country, and were a reliable source of feeder traffic for the trunks. The key assumption underlying this pattern of route authority was that airlines were like railroads, where competition requires duplication of facilities. This assumption was misplaced. The "sunk costs" for air travel are airports and airspace systems controlled by government, not airways. By the 1970s, eleven trunk carriers were still in operation, along with ten local service carriers.

Economic studies provided a critique of regulation and made the case for airline regulatory reform. Richard Caves, 1962 could find no evidence of economies of scale at a system level in the airline industry and thus no evidence of any need for federal control over entry. Michael Levine, 1965 and William Jordan, 1970 chronicled the successful performance of the largely unregulated intrastate airline markets in California. These carriers charged fares that were about half as high as those offered by CAB certificated airlines, and they offered high-load factor (percentage of seats filled), frequent services. In markets such as Los Angeles-San Francisco that had been considered fully developed, traffic grew when the intrastate carriers entered. This growth was at a much higher rate than in other similar markets which the regulated carriers served. Moreover, the low price intrastate carriers in California were generally profitable, as was, beginning in the early 1970s, Southwest Airlines operating within Texas. Thus, the experience of the intrastate carriers seemed to suggest that regulation was preventing low-fare options for consumers.

Other persuasive evidence came from a study by George Douglas and James Miller, 1974. They, among others, began to build more sophisticated models of airline competition. These models showed that the existing regulatory regime, in which regulators set prices by a formula based on distance, but carriers were free to determine frequency of flights, was resulting in too many flights and load factors that were too low. Customers might prefer lower quality service (more crowded planes) service with lower prices to higher quality service with higher prices. Yet, the regulatory regime was not willing to provide the low price/low quality combination. Moreover, technical change had lowered costs of longer-haul relative to shorter-haul services while the regulatory price formula lagged. Hence, prices tended to be set more above costs the longer the length of haul. Instead of added profits from these longer-haul flights, load factors on them just became lower. In contrast, a model of an efficient airline system would have load factors both higher than those under regulation and load factors that would increase with length of haul. The

reasoning on higher load factors overall was that when price and service could both vary, price discounts would be offered to better fill planes. The reasoning on higher load factors for longer hauls was that passengers were not as time sensitive on longer-haul flights. That is, if an individual wants to go from Los Angeles to San Francisco in the morning, it matters a lot whether the plane leaves at 7:30 a.m. or at 10:00 a.m. However, this difference matters a lot less if the individual is flying from Los Angeles or San Francisco to New York. During the decade or more prior to regulatory reform, load factors for all certificated carriers had hovered in the 50-55 percent range.

Air Passenger Regulatory Reform Hearings in 1975

The decade prior to 1975 was characterized by double digit inflation and high unemployment, so-called stagflation. Wage and price controls had been tried and failed. So the stage was set for economic regulatory reform. (See Greenspan, 2007) The political trigger for reform in the airline industry occurred in 1975 when Stephen Breyer (then on-leave from Harvard Law School, now a Supreme Court Justice) marshaled evidence in a series of highly visible hearings held by Senator Edward Kennedy. These hearings focused on three questions: Are CAB fares too high? Has the CAB blocked entry? Will reform hurt small communities? Each of these questions involved a detailed empirical investigation whose purpose was to create a widespread conviction that reform was desirable. A political coalition needed to be formed around the issue, and to achieve this coalition, the issue had to be made visible.

The "Are CAB fares too high?" question provides a concrete example of how the hearings worked. The intrastate experience in California was portrayed using 1974 fares. A passenger flying 338 miles between San Francisco and Los Angeles on Pacific Southwest Airlines (PSA) paid $18.75; the traveler (such as Senator Kennedy) flying the 399 miles between Boston and Washington on CAB-regulated carriers paid $41.67 (see Breyer,1982), more than twice as much. An analysis was done in great detail to identify what the fare difference reflected. The same plane, a Boeing 727-200 was filled on average 55 percent full when flown with 121 seats by American Airlines, but was 60 percent full when flown with 158 seats by PSA. So, the price differences reflected fuller planes and more dense seating. The two routes were shown to have similar density (roughly 915,000 passengers on the West Coast route, and 981,000 passengers on the East Coast route), so the price differences did not reflect different traffic densities. The Federal Aviation Administration presented data showing no additional costs due to weather. The Air Transport Association was asked to provide an independent study of the causes of the fare differences and could account only for roughly $6 of the $20-30 difference on most routes. At the end of the investigation, the point "Yes, CAB fares are too high" was validated by the public policy debate.

Each of the major objections to reform was dealt with in a similar manner. "Has the CAB blocked entry?" was addressed in two ways. The CAB was shown to have had a route moratorium in the early 1970s in which it refused as a matter of policy to entertain any applications for new route authority. From 1938 to 1976, the CAB was found to have not certified a single new trunk carrier. The question "Will reform hurt small communities?" generated a similar amount of study. Residual concern about this issue meant that small community air service would continue to receive subsidies as part of the reform package.

The road to reform did not end with the Kennedy hearings. The hearings raised the bar by having reform reach major issue status. President Ford and President Carter, as well as Senators Kennedy and Cannon, continued to work the reform issue. There were still powerful groups who had vested interests against reform; mainly the major certificated air carriers and their unionized employees. Smaller communities receiving subsidized air service were concerned about service. Airport operators wanted to protect their ability to raise capital on the security of long-term leases with certificated carriers.

In terms of the prevailing scholarship, political forces with stability (such as incumbent firms, labor unions, etc.) would gain over time ever more influence over the agencies that regulated them. George Stigler, 1971 and Sam Peltzman, 1976 predicted capture of the regulatory agency by such constituencies. Indeed, the blocking of new entry in the industry by the CAB can be interpreted as capture of the agency by the incumbent carriers. Yet, the regulatory reform movement itself would seem to adhere more to the entrepreneurial political competition model of James Wilson, 1980 where a political entrepreneur would advocate for consumers and influence the policy debate even when the costs of reform were likely to be narrowly concentrated on the industry and its unionized employees (but, see also Levine, 2007).

Air-Cargo Regulation as a Candidate for Reform

On the air cargo side, the CAB permitted cargo to be carried in the belly of any type of aircraft over any route for which an airline had passenger authority. The combination aircraft was scheduled during the day to suit passenger needs rather than during the night which would better suit cargo demands. In addition, there were four publicly traded all-cargo carriers. Three of these were certificated all-cargo carriers. They tended to have both domestic and international authority. The fourth was an unregulated commuter (air taxi) aircraft operator, Federal Express. Federal Express could only use very small aircraft, (7,500 pounds of payload capacity or less), such as Falcon jets. By comparison, a Boeing 727 (small combination aircraft) could carry a payload of 40,000 pounds.

Between 1956 and 1977, no new all-cargo airlines were certificated. Essentially, the all-cargo carriers were confined to the routes they received when first certificated in the late 1940s and early 1950s, to prevent them from competing with passenger carriers. A new applicant was required to bear the burden of proof in demonstrating that its service would meet the test of "public convenience and necessity". This meant that incumbent carriers could block competitive entry on their routes. The CAB rejected petitions, such as those of Flying Tiger and others, who had requested route extensions. The CAB also rejected petitions, such as that in 1975 from Federal Express, to operate five larger capacity aircraft. So Federal Express had to fly many small planes wing-tip to wing-tip in its denser markets. Rate regulation was onerous and slow. CAB regulated prices were based on rate averaging based solely on shipment size and distance, not on timely delivery. The CAB also set rates of air cargo carried in the belly to divert traffic from all-cargo to combination aircraft. The Domestic Air Freight Rate Investigation, begun in 1970, was still open in 1977. Further, the Interstate Commerce Commission (ICC) prohibited airlines from transporting air-cargo by truck except within twenty-five miles of an airport. This distortion meant that there was a need to contract with regular motor carriers for pick-up and

delivery. Yet the ICC, like the CAB, did not allow higher prices for faster service. Moreover, coordination between truck and air schedules introduced inefficiencies. Just as passengers prefer single carrier service, so too such service is an element of efficient delivery in terms of freight distribution and logistics.

In June 1976, the CAB, under Chairman John Robson, proposed to Congress that cargo be treated independently of passenger operations and subject to full economic regulatory reform. Such complete reform went beyond measures then offered by Senator Kennedy and by the Ford administration. Entry would immediately be fully free for the certificated all-cargo carriers and existing commuter all-cargo carriers. New carriers would enter one year later. Rates were to be considered legal unless found to be unjustly discriminatory or predatory. Hearings were held in 1977 on a comprehensive (air-passenger and air-cargo) reform bill. Air-passenger regulatory reform was still controversial due to the interest groups who feared they would be harmed by reform. However, the certificated all-cargo and commuter all-cargo carriers had joined together in a call for regulatory reform. The combination carriers (trunks and local service) did not weigh in on the cargo reform issue. Thus, the stage was set for successful client politics in Wilson's terminology. There was strong support for air-cargo reform by all-cargo carriers who stood to gain, while opposition was diffused. Lawyers for Flying Tiger and Federal Express worked actively with Congressional committees, and when it appeared the comprehensive bill would not go through unless unbundled from air-passenger services, an amendment was introduced by Senator Howard Cannon that would deregulate the all-cargo air transportation mode. This amendment was approved on October 20, 1977. The amended bill was signed into law by President Jimmy Carter on November 9, 1977 (Public Law 95-163). The bill allowed the all-cargo carriers to use larger aircraft, schedule them without geographic restrictions, and set prices according to market forces.

As described by Andrew Carron, 1981 air-cargo deregulation was an immediate success for the all-cargo carriers. Federal Express saw its share price rise from $9.16 in October 1977 to $34.75 by December 1977. Flying Tiger rose from $11.13 to $16.38 in the same two months. Meanwhile, the Dow Jones transportation index (which had lost 2.2 percent the year before cargo deregulation) increased some 5.5 percent during those same months. Federal Express immediately began acquiring jet freighters, each seven times the size of its largest aircraft under regulation. In the first year after air-cargo deregulation, freight service expanded sharply, with cities that had lost freighter service gaining the most when deregulation opened those markets. Federal Express, for example, expanded total shipments by 38 percent in 1978 compared to 15 percent in 1977. Predictions of transitional chaos were not fulfilled. Thus, air-cargo deregulation joined the experiments in deregulation of the air-passenger services in California and Texas, as a success. The experiment made passage of a more comprehensive air-passenger deregulation bill the following year a lot easier.

Air-Passenger Deregulation in 1978

The arrival of Alfred Kahn at the CAB took place in the summer of 1977. Kahn had academic credentials as the author of the preeminent academic treatise on the economics of regulation (Kahn 1971). But he was also effective in terms of testifying before Congress and having access to the White House. He has been dubbed "The Father of Deregulation."

Kahn brought together a team that included myself (as a commissioner), former academics Michael Levine and Darius Gaskins (as senior staff members), Philip Bakes (a congressional staff member who became CAB general counsel) and Mary Schuman (now Mary Boies) of the White House domestic policy staff. The CAB members of the team adopted "sunshine" rules for its weekly meetings, and proactively brought forth policies that would accomplish deregulation administratively. On the pricing side, the CAB provided immediate opportunities for discount fare flexibility by asking carriers to "show cause" why up to 35 percent of all fares should not be sold at a rate that would permit carriers to fill empty seats during off-peak periods. By permitting downward pricing flexibility before upward pricing flexibility, there would be gains for consumers and, in the short run at least, gains for the carriers as well. The thinking was that such win-win strategies would provide evidence of success from deregulation and make Congress more comfortable in passage of an airline deregulation bill. On the entry side, there was a need to open the system up to new entry in a manner that was consistent with administrative procedure. An idea that was adopted involved underserved airports. If an airport such as Newark, Baltimore, Midway or San Jose was underserved in its metropolitan area, carriers should "show cause" why the CAB should not permit any carrier to enter any route to and from that airport. Again, the idea was to come up with a win-win strategy, win for industry, win for communities, that would make Congress more comfortable with the deregulatory agenda. (See Bailey, Graham and Kaplan, 1985)

The commitment and dynamism of the CAB team was helpful in turning the tide toward passage of the deregulation bill in 1978. The success of air-cargo deregulation also helped. Air-passenger deregulation was signed on October 28, 1978 (Public Law No. 95-504). The law proposed a gradual reduction in CAB regulation, with entry deregulation to be completed by December 31, 1981 and price regulation to cease two years later. The Board would "sunset" its operations entirely by January, 1985. The remaining CAB responsibilities of international negotiations and small community air service would shift to the Department of Transportation. Antitrust authority would be shifted to the Department of Justice. Safety regulation remained at the Federal Aviation Administration.

Welfare Effects Following Air-Passenger Deregulation

Deregulation removed regulatory price controls. The result was lower average prices. The popular press (Economist, June 16, 2007, USA Today, July 24, 2007) reports that the average fare paid in cents per mile has been cut in half since 1977 in inflation-adjusted terms. Prices passengers paid to fly one mile went from 10.08 cents in 1970 down to 4.20 cents by year end 2006 (in 1978 cents per passenger mile). Price deregulation has preserved and deepened the downward trend of airfares even as prices for other big-ticket items (like college tuition) have risen. Overall, the depth of the price decline is perceived to be of the same magnitude as took place within unregulated states (California and Texas) in the 1960s and early 1970s.

Economists, however, have conducted more sophisticated studies that result in significant, but somewhat lower welfare benefits from fare reductions. Morrison and Winston, 1995 used a carefully constructed counterfactual using the regulatory standard industry fare level (SIFL). The idea is that the correct comparison is between the average prices that would have been set by

the regulatory agency if it had continued, versus the prices in the deregulated marketplace. The counterfactual model has been updated to 2005 by Borenstein and Rose, 2008 who show actual fares were only about 30 percent lower than SIFL-formula fares in 2005. This lower reduction still suggests a consumer welfare increase of about $28 billion in that year. In addition, load factors also improved much as had been predicted, from 60 percent in the mid 1980s, to well into the 70 percent range by the 1990s.

There has been enormous price dispersion from deregulation both within and across routes. Across routes, fares have fallen more on long routes than short routes, as was anticipated by Douglas and Miller. The dispersion within routes was unanticipated, mostly due to creation of sophisticated yield management systems by airlines to differentiate business from leisure travelers using devices such as the Saturday-night stay restriction. Frequent flyer programs, in contrast, favor business travelers, seeking to build brand loyalty through upgrades and free tickets. Other business innovations in the early years after deregulation include creation of computer reservations systems, and more recently, ticketing through the Internet.

Another unanticipated aspect of airline deregulation was the almost immediate transformation of airline networks from linear point-to-point systems created by the CAB into hub-and-spoke networks. These networks enabled improved scheduling of flights so consumers could conduct business by leaving early in the morning and returning home in the evening. Morrison and Winston, 1986 found that many of the gains of deregulation to business travelers were due to improved frequency of scheduling. But the creation of hub-and-spoke delivery systems also meant a single carrier could create a degree of monopoly power at a hub airport.

Contestability theory, as put forth most fully in William Baumol, John Panzer and Robert Willeg, 1982, argues that market segments that appear to have elements of natural monopoly can be unbundled from direct regulation because entry (threat or actual) will discipline pricing of an incumbent monopolist. A majority of airline routes are served by one airline. But it was thought that airplanes were "marginal costs with wings" that could readily be moved from market to market. Instead, entry did not serve to mitigate monopoly pricing during the 1980s and 1990s, particularly at hub airports where one carrier had 50 percent or more of the scheduled passenger traffic. A price premium of roughly 20 percent was typical (see Borenstein and Rose, 2008, for a history of scholarship on this point). An interesting exception to this finding is presented in a study by Goolsbee and Syverson, 2006. They find that potential entry by Southwest Airlines into point-to-point routes where Southwest is present at both airports serves to lower prices about 60 percent of what actual entry would provide. So Southwest Airlines has provided a degree of contestability in the deregulated marketplace. Indeed, the fare disparities at hub airports have narrowed in recent years due to the growth in market share of the low-cost new entrant carriers. Low-cost carriers have grown in market share from a few percent in 1980 to about 10 percent in 1995 to nearly 30 percent in 2007.

Welfare gains have also been achieved in terms of new nonstop service to some 26 percent of cities. This change corresponds to the widespread introduction of regional jets, which grew from almost none in 1997 to nearly one-third of all domestic commercial flights in 2005. The rapid introduction of such new technology demonstrates the flexibility of the deregulated industry in remaking itself (see Borenstein and Rose, 2007).

Industry structure has been dramatically altered between 1978 to 2007. Many of the former trunk carriers bought the local service carriers concentrated in their hub cities (e.g. Northwest bought Republic, Continental bought Frontier, Trans World bought Ozark). These purchases may have been motivated in part by the stable and positive (rather than cyclical) earnings of the local service carriers (see Bailey and Williams, 1988). Since passengers strongly prefer single carrier service for their travel, the strategy of serving the full domestic marketplace was also a factor in merger activity (e.g. Delta bought Western, US Airways bought PSA and Piedmont). Consolidations have also included many takeovers of former low-cost new entrants. Today, of seven remaining major carriers, (market share of 5 percent or more), two are managed by the new low-cost entrants, Southwest Airlines and US Airways (acquired by America West).

There has been financial distress and exit, not just new entry and consolidation in air-passenger services. A number of airlines have been liquidated (Braniff, Eastern, Pan American). Others (Continental, Northwest, United, US Airways and Delta) have used the bankruptcy code, not to exit the industry, but instead to break labor contracts and/or remove legacy pension costs from carriers' books to the government. Airport and air traffic control systems (both under government ownership) have lagged behind the industry growth that has taken place following deregulation. Moreover, carriers at hub airports may optimize their networks with some expected delays built in (see Mayer and Sinai, 2003). Not surprisingly, when delays become unreasonable, Congress has considered a degree of reregulation, at least to the extent of declaring truth in airline scheduling in the late 1980s, or considering a passenger bill of rights today. Levine, 2007 offers an interesting perspective about the difficulties of reregulation in the air-passenger case where the independent regulatory agency has been "sunset" and the industry no longer speaks with one voice (legacy versus new entrant carriers). Another complaint has been the inconvenience caused by added security post-September 11, 2001. There was a financial bailout of the industry at that time, and subsequently the federal government has taken over the security function at airports.

Finally, welfare benefits associated with air-passenger deregulation include the spill-over effect that lower US fares and greater airline efficiency has had on the international scene. Many foreign airlines had been government-owned. The privatization movement (e.g. of British Airways, 1983) has been driven in part by the need of foreign airlines to better compete with the deregulated US airlines. The emergence of low-fare carriers has also been a factor internationally (e.g. Laker, Ryanair, Virgin) as it has been domestically. Within the European Union, freedom of entry was finally established in 1997. There remains a goodly amount of regulation on the international scene, however, with restrictions on foreign ownership and restrictions of access to international airports by carriers wishing to offer new service. In the face of these restrictions, many airlines have formed alliances which enable sharing of frequent flyer benefits and more efficient scheduling.

Welfare Effects Following Air-Cargo Deregulation

When the U.S. Congress deregulated air-cargo transport in 1977 and interstate trucking in 1980, it created opportunities for certificated air-cargo and for express air-cargo carriers. Merger activity was an important structural adjustment following air-passenger deregulation. It was also

important on the air-cargo side. Flying Tiger merged with Seaboard, and by 1981 sought to take over Airlift's international routes. By 1989, Federal Express bought Flying Tiger in order to secure landing rights at major international airports, so that it could operate a seamless domestic and international system. The other major US cargo carrier is United Parcel Service, which had its initial public offering in 1999. There are numerous foreign carriers who transport roughly two-thirds of global air freight.

Logistics and operational change (hub-and-spoke systems) was an important feature following air-passenger deregulation. So, too, logistics and hub-and-spoke systems were important innovations in air express service. Federal Express established Memphis as its night-time hub. It put all package-related information in a central computerized system by 1979, installed digitally-assisted dispatch systems in its trucks by 1980, and established delivery guarantees at 10:30 a.m. by 1982. It offered online tracking in 1994 and formed a public-private alliance with the U.S. Postal Services. (See Birla, 2005). It also sought an exception to the private express statutes that enabled the delivery by private carriage of urgent communications as long as the price charged is at least $3.00 or twice as much as the first-class rate. (See Crew, 1996). There is strong demand for priority shipping services that save time even if a premium must be paid. Yet, as we have seen, time was not a consideration at the CAB or the ICC in setting rates. So the huge success of express services would not have been possible absent air-cargo deregulation.

When the air-cargo industry was deregulated, the CAB suspended many data reporting requirements. Therefore, it has not proved possible to set up a counterfactual study on pricing as has been done on the passenger side using the SIFL. However, Hummels (2007) has attempted to construct a data set that displays air-cargo rates over time. He shows that air-cargo rates rose through the 1970s until 1980 (due to oil price increases) and thereafter price declined 2.52 percent per year from 1980 to 1993. Another index shows inbound air freight falling 2.5 percent per year from 1990-2001, and thereafter rising due to greater security costs after September 11, 2001. Air shipping, according to his data, grew between 1955 and 2004 from an insignificant share of trade to a third of US imports by value. These trends are due in part to technological change in aircraft (the shift to wide bodied planes) and in ocean shipping (containerization). They are also due to shifts in consumer tastes, so that more expensive items have become a higher portion of trade. Hummels (2007) considers the example of importing a bottle of wine from France. Air shipping costs of $8 are assumed to be twice ocean shipping costs of $4. If the bottle of wine costs $16, this added cost represents a 25 percent increase, but if the bottle of wine costs $160, the added transport cost of air shipment goes down to 2.5 percent. A consumer is more willing to use the more expensive mode of transportation if the percentage effect on delivered price is smaller.

Evans and Harrigan (2005) study a case where the demand for timeliness comes from producers rather than from consumers. When restocking is frequent, lean retailing requires bar codes to keep track of daily sales of each item, electronic data interchange between retailers and suppliers, and modern distribution centers. The essence of lean retailing is rapid response to demand fluctuations in lieu of holding large inventories. Just-in-time and air express are in the forefront of this new era. Consistent and predictable overnight cargo delivery on a national – and, later, international scale was a major breakthrough for both retailers and producers. Implementation was a major challenge in transport logistics. Custodial treatment of packages, absolutely

accurate records, and instantaneous tracing capabilities were new business capabilities. Air express service had been suppressed under regulation, due to the restrictions on plane size. It has flourished under deregulation, and been part of a new, high-value added, technology-intensive service. Evans and Harrigan do not study the deregulation issue, but instead focus on the increased importance of timeliness in helping explain the effect of distance on trade patterns. Products where timeliness matters grew much faster from nearby countries than they did from Asia, at least for US apparel imports.

Conclusion

Air transportation regulation appeared to favor incumbent carriers, those in passenger transport more than in air-cargo. It suppressed new entrants, whether low-cost carriers like Southwest Airlines, or carriers concerned with timely delivery, like Federal Express. Deregulation has permitted such carriers to flourish, leading to greatly lowered prices for air-passenger travel and to more timely delivery modes for air-cargo.

In terms of the anticipated and less anticipated aspects of reform, economists were pretty accurate on the welfare gains from lower prices. Where they were less on target had to do with business issues like marketing (building brand loyalty), operations (optimal flow of traffic through networks), and innovations in logistics (just-in-time inventory systems).

Air carriers are no longer in the same straightjacket that they were in during the days of economic regulation. But deregulation has not moved the air transportation industry quickly into a new equilibrium configuration. Instead, deregulation has enabled a plethora of creative destruction. Consumers have gained enormously from lower fares. Innovation has been rampant. New industries and firms have been born and reconfigured. Operations have been redesigned. Deregulation has enabled a dynamic, not a static, marketplace.

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