Competition without Apology

Market Power and Entry in the Deregulated Airline Industry

Andrew N. Kleit

Airline deregulation has been a great success story. As a number of articles have shown, deregulation has generated substantial benefits for consumers. Yet airline deregulation has not worked out the way most policy analysts envisioned. In particular, the proponents of deregulation in the 1970s incorrectly painted the deregulated skies as being filled with a multitude of new carriers. While entry of new airlines did occur in the early years of deregulation, many of these fledgling carriers either went out of business or merged with their larger rivals.

Concentration at the national level (although not on a route-by-route basis) in the airline industry has significantly increased over its 1984 levels, largely because of airline mergers the Department of Transportation allowed in the mid-1980s. DOT felt that while the mergers would raise concentration to high levels at various airports, the threat of new entry would prevent prices from rising above competitive levels. These mergers left the industry with about eight major carriers and several smaller lines.

The DOT decisions generated substantial criticism. In particular, it is argued that entry into airline markets is not so easy as deregulation's initial proponents and DOT believed and that, as a result, passengers flying to and from certain concentrated hub airports are paying supracompetitive prices.

While there are competitive problems in airline markets, there is no fundamental flaw with deregulation, nor did DOT action substantially threaten the gains from deregulation. Although modifications to the competitive system should be adopted, they should be limited in scope and designed to complement existing market mechanisms.

The Empirical Work on Airline Fares

One legacy of the regulated airline era is the massive amounts of data on airline prices DOT continues to collect. Researchers have used these data to produce numerous empirical investigations of airline competition.

The conclusions of these studies are fairly consistent. The vast majority of routes (about 90 percent) are served by a number of major airlines that act in a competitive fashion. The hub-and-spoke system that developed in the 1980s has substantially increased the number of routing and airline options for passengers. For instance, a person wishing to fly from Washington, D.C., to San Diego can select among several airlines through a variety of connect points—America West through Phoenix, American

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through Chicago or Dallas, Continental through Denver or Houston, Delta through Cincinnati, Dallas, or Salt Lake City, Northwest through Detroit, Memphis, or Minneapolis, TWA through St. Louis, USAir through Pittsburgh, or United through Chicago or Denver.

The empirical research also finds, however, that passengers at the most concentrated hub airports pay supracompetitive price premiums. For example, the 1990 *DOT Airline Competition Report* found that passengers at the eight most concentrated hubs (about 4 percent of national traffic) pay on average approximately 19 percent more than the national average for airline services (Table 1). The price effects ranged from 10.4 percent (Pittsburgh) to 34.1 percent (Cincinnati). These higher prices fall largely on those persons flying fewer than 1,000 miles. Passengers traveling more than 1,000 miles typically have many competitive options from which to choose, because for such distances flying through other hubs is a viable option.

Nevertheless, the empirical work is not without its anomalies. For instance, the price effects in the second eight most concentrated hubs (about 11 percent of the national market) are mixed. They average 8.9 percent, but range from −18.0 percent (El Paso) to 40.2 percent (Atlanta, 38.8 percent in 1984 before Eastern's most recent troubles). Furthermore, the market power hypothesis implies that prices at three-carrier hubs (Chicago and formerly Denver) would be lower than prices at two-carrier hubs (for example, Atlanta and Dallas), which in turn would be lower than prices at one-carrier hubs.

Yet this is not always the case. For instance, while Denver remains an inexpensive place from which to fly, Atlanta is quite expensive. Indeed, Atlanta is more expensive to fly from than any one-carrier hub. Denver's 1988 −5.4 percent premium as a two-carrier hub is only slightly higher than its −6.0 percent premium as a three-carrier hub in 1984. Pittsburgh and Cincinnati are both highly concentrated one-carrier hubs (USAir with 86 percent of the traffic in Pittsburgh and Delta with 78 percent of the traffic in Cincinnati), yet the difference in price premiums between the two is over 20 percent, with the more concentrated airport having the lower prices. The 18.5 percent premium in Dallas, where American competes with Delta (and Southwest to a lesser extent), is greater than the 10.3 percent premium in Nashville and the 9.6 percent premium in Raleigh/Durham, hub airports where American faces little competition.

The market power hypothesis also implies that the larger the change in concentration, the higher the increase in price. Yet in Memphis, the one-carrier hub city with the largest increase in concentration from 1984 to 1988, prices rose only .7 percent between those years. In Nashville, the two-carrier city with the largest increase in concentration during those same years, prices *fell* 7.1 percent. In both sets of cities the correlation between change in concentration and change in price premiums is very close to zero.

While there are competitive problems in airline markets, there is no fundamental flaw with deregulation, nor did DOT-authorized mergers substantially threaten the gains from deregulation. Modifications to the competitive system should be limited in scope and designed to complement existing market mechanisms.

The empirical work also seems to imply that price

Table 1: Fare Premiums at Concentrated Hubs, 1988

One-Carrier Hub	Premium (%)	One-Firm Market Share (%)
Charlotte	27.1	90
Cincinnati	34.1	78
Dayton	17.3	75
Memphis	28.8	86
Minneapolis/St. Paul	19.7	78
Pittsburgh	10.4	86
St. Louis	17.8	82
Salt Lake City	16.7	80
Average	18.7	83
Two-Carrier Hub	**Premium (%)**	**Two-Firm Market Share (%)**
Atlanta	40.2	93
Chicago	− .1	72
Dallas	18.5	79
Denver	− 5.4	85
El Paso	−18.0	73
Houston	6.7	76
Nashville	10.3	71
Raleigh/Durham	9.6	80
Average	8.9	80

Source: *DOT Airline Competition Report*, 1990, pp. 12-13.

is related not to market concentration but to the market share of the largest firm. Why would customers pay more for flying on the largest airline in a particular market? It may well be that being the largest carrier in a particular market offers certain advantages derived from economies of scale. For instance, the largest carrier may offer lower search costs to consumers looking for the most convenient flight, more services at an airport, such as ticket attendants, more pleasant terminal accommodations, or larger, more comfortable planes flying on particular routes.

Unfortunately, it is difficult for a statistical analysis to capture all of these attributes. For instance, there are no readily available data that describe how much waiting room a particular carrier offers its passengers at each airport or how far it is from curbside to gate. It is quite possible that the higher prices for the largest carriers are determined by these excluded variables. If so, higher hub prices represent not market power but higher quality service generated from economies of scale in the airline industry.

Barriers to Entry

The original proponents of airline deregulation came close to arguing that airline markets were "perfectly contestable"—they lacked barriers to entry. Under such circumstances, even if a particular market had only one firm, that firm's pricing would be effectively constrained at competitive levels by the threat of new entry.

Although the most commonly accused villain for airline entry barriers is the local travel agent, it seems unlikely that customers enter into long-term relationships with travel agents only to be systematically abused by them.

The recent empirical literature, with its implication of market power in the airline industry, came as somewhat of a surprise to some of the economics profession. Given these conclusions, there was a need to explain the barriers to entry that were allowing market power to be exercised. While some of these explanations are logically consistent, many of the arguments in this area appear flawed.

Travel Agency Commissions. The most commonly accused villain in the airline entry barrier field is the local travel agent. Large airlines are accused of "bribing" agents to book customers on their flights by offering higher commission rates for larger volumes of sales. Smaller airlines, with fewer flights, are claimed to be at a disadvantage in deceiving customers. Since this argument is so frequently invoked in discussions of entry barriers in the airline industry, it is worth analyzing in detail.

With over 30,000 travel agencies across the country and rapid entry and exit, the travel agent market appears to be highly competitive. Nonetheless, competition alone may be insufficient to eliminate the problem of deception. Even in a competitive market, firms may lack the necessary incentives to provide their customers with the optimal amount of information. In effect, firms could compete for "fraud rents"—an inefficient market outcome.

Deception is most likely to occur in environments with three general characteristics. First, deception is more likely to occur in markets in which the consumer cannot easily evaluate the good or service, even after consumption. Deception is also more likely when the good or service is purchased infrequently, so that the reputation gained from a purchase is not an important constraint on the agent's activities. Finally, successful deception is likely when the consumer has no easily accessible alternative sources of information. For instance, deception might be expected in the servicing of major automobile repair problems and in the provision of medical care.

It is not clear that any of these conditions characterizes the travel agent market. The price and quality of the service represented by airline tickets can be easily evaluated. Further, airline customers are likely to use the same travel agent or airline several times. Finally, consumers have many other sources of flight information. They can call an airline directly, analyze advertisements, visit other travel agents, examine an Official Airline Guide, or perhaps simply ask their usual agent whether other flights are available. In the case of business clients, firms can also audit their agent's performance or vertically integrate by establishing in-house travel services. Thus, it seems unlikely that customers enter into long-term relationships with travel agents only to be systematically deceived by them.

Display Preference in Computer Reservation Systems. Almost all travel agencies use a computer reservation system to access information on airline flights. The four existing domestic systems are

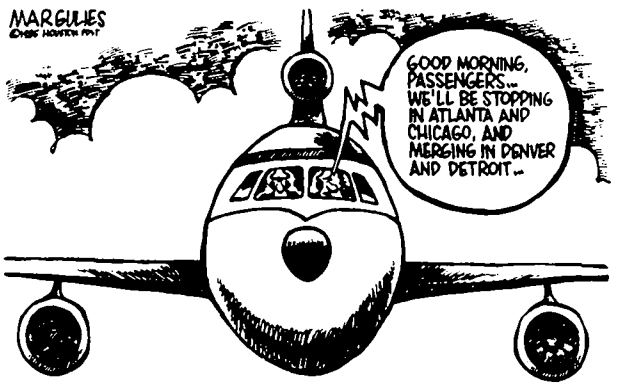
owned by various groups of airlines. These airlines are alleged to be giving themselves display preference (arranging for their flights to have higher ordering, popularly known as "bias") in their vertically integrated systems. This makes it more likely that travel agents will notice their flights. This practice is claimed to improperly exclude the rivals of these carriers.

A 1984 Civil Aeronautics Board regulation eliminated explicit display preference, where the computer system's screen ordering is directly affected by carrier identity. Claims of implicit bias—when a carrier-vendor uses service-related factors in its display ordering that improve its own flights' screen position—linger on, however. Unfortunately, it has never been clearly explained why display preference in computerized reservation systems is any different from display preference on grocery shelves and soft drink machines. In such contexts display preference reduces search costs by making it easier for consumers to reach the goods that they are most likely to choose.

The best argument given is that display preference abets travel agents' deception of consumers, but the discussion above indicates such deception to be unlikely. It would seem more likely that what was generating display preference in the past (and may be doing so now) is particular travel agencies' preferences for specific airlines. This is no different from the preference for brand names shown in other parts of the economy. If anything, a computerized reservation system appears to be an area where less, not more, regulation is called for, as there does not appear to be any coherent economic rationale supporting the 1984 CAB regulation on display preference.

Frequent-Flier Plans. Millions of airline customers carefully save their frequent-flier miles, often accumulated on business trips, and cash them in for trips to Hawaii and other exotic places. It has been asserted, however, that frequent-flier plans make entry difficult by creating artificial economies of scale. For instance, it may be difficult for an airline with relatively few routes and destinations to compete with an airline with hundreds of destinations. Small airlines, however, can join the frequent-flier plans of other large airlines, as foreign carriers often do.

Frequent-flier plans are argued to be a way for airlines to obtain more business by having employees cheat their employers. For instance, if a business traveller books his own flight, he may select the



airline for which he is collecting frequent-flier points, regardless of the price the airline charges his firm or the time costs to his employer. Yet if employers were really concerned about such possible abuses, they could make bookings through a central point or arrange for the firm to capture the frequent-flier points. Many companies, as well as the U.S. government, do exactly that.

In economic terms frequent-flier plans appear to work as newspaper discount coupons and green stamps—they bring customers to the market who would not ordinarily be reached. In addition, airline seats are perishable goods. If seats are not used, their value disappears. Airlines face substantial variance in demand, and they must schedule their flights well in advance. By tying frequent travelers to airlines through frequent-flier plans, airlines may be able to reduce the variability in demand that they face. Reducing this variability allows airlines to increase their load factors, which increases efficiency in the industry and reduces prices for all consumers.

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It may well be that a good part of the popularity of frequent-flier programs can be attributed to their tax-free status. Businesses may prefer to pay their employees in frequent-flier mileage rather than in taxable income. This problem could be solved by modifying the tax status of frequent-flier miles, without eliminating frequent-flier programs.

Slot Constraints at Major Airports. Because of congestion and noise problems, four U.S. airports (O'Hare, Washington National, Kennedy, and La Guardia) are constrained in their output, with their available capacity allocated by slots. (A slot is the right to take off or land during a particular hour at one of these airports.) The market for slots, established by the FAA in 1985 after a six-week 1982 experiment, has not seen the large number of transactions originally predicted. It is argued that to prevent competition the largest carriers at each airport restrict entry by refusing to sell slots to potential rivals. This scenario, however, seems somewhat unlikely.

No firm is really dominant in any antitrust sense at any of these airports, although conceivably a collusive scheme between United and American, who together have 74 percent of the slots at O'Hare, could represent a competitive threat. But Chicago is a very low-priced hub city. Further, each of these airports, has at least one viable competitor (Midway in Chicago, Dulles and Baltimore-Washington International in Washington, and Newark in New York, as well as La Guardia and Kennedy, which compete with each other).

So why is the slot market behaving so sluggishly? The most likely explanation is that firms holding slots are unsure of their property rights. While carriers have been allowed to sell their slots, they have never been given clear title to them. DOT received significant criticism from Congress for giving carriers the right to sell valuable slots without making carriers pay anything in return. The slot transactions that currently take place generally take the form of asset swaps, with slots being traded for equipment or facilities. In this way it is difficult to calculate the value of the windfall that has accrued to carriers through slots. A sale of slots for cash (for example, to a new entrant who has no in-kind goods to trade) would expose the selling carrier to political criticism.

The tax status of frequent-flier miles could be changed without eliminating frequent-flier programs. The market for landing rights could be reformed by giving airlines clear title to slots. This would put smaller airlines on an equal footing in bidding for slots.

A promising avenue would be to reform the market for landing rights by giving airlines clear title to slots. This would eliminate the incentive to make "in-kind" trades and would put smaller airlines on an equal footing in bidding for slots. The objection generally presented is that such a reform would give incumbent airlines a windfall from gaining valuable slots at no cost. The way the regulatory system has played out, however, airlines have already received their slots for free and only have to worry about hiding the magnitude of their windfall from Congress. Giving airlines clear title to slots would eliminate this worry and would allow slots to be used more efficiently, to the benefit of both airlines and their passengers.

Restrictions on Airport Expansion. Many airports have most of their gates tied up on long-term contracts with the largest local carriers. Normally airports might be expected to be good agents for their constituency. Thus, such contracts should help the flying public. But airports may be run by local authorities that are captured by the largest local carrier. Further, many of these contracts are long-term agreements lasting from 15 to 30 years that were made during the pre-1978 era of airline regulation, when incentives for both airport authorities and airlines were vastly different.

At many airports the largest carrier has majority-in-interest rights allowing it to veto new spending projects. In effect, the airport authority has granted one carrier the right to make important economic decisions for the entire airport. This type of contractual restraint may well serve to protect local monopolies.

While exclusionary contractual leases at airports can constitute barriers to entry, it is not clear that anything should be done about them. To run a hub properly—the efficient form of competition—an airline needs to ensure that it receives a great deal (and often the vast majority) of an airport's resources. It needs many gates near each other, ticketing counters, access to rapid baggage handling, availability of repair facilities, and a good deal of other inputs. Exclusionary clauses are an effective way of ensuring that these services are received. Majority-in-interest clauses also often require the largest carrier to cover a large degree of the financial risk inherent in an airport's operation, risk that an airport authority may not have the financial resources to hold. Given such responsibility, it is only natural that the carrier possesses the ability to limit its risk exposure by preventing overexpansion on the part of the airport authority. Thus, exclusionary clauses

at airports, while generating barriers to entry, also generate important efficiencies. To maintain these efficiencies, any government intervention must be finely tuned. Unfortunately, government rarely shows that kind of delicate touch.

Restrictions on International Flights and Cabotage. The domestic airline market has been effectively deregulated, but the international market has not. International aviation policy presents two types of competitive issues, each with its own set of regulatory rules.

International routes are not allocated by any market mechanism. Rather, they are handled by a myriad of bilateral treaties. DOT negotiates with its foreign counterpart over the number of carriers and flights on each route. Over the years DOT has wandered from a protectionist policy (protecting incumbent airlines) to a proconsumer, free-market policy, and back again, depending on the political strength of airlines over DOT (and DOT's oversight committees on Capitol Hill) and the competitive sentiments of DOT's political leadership.

It takes two to play the bilateral treaty game, and there is not much DOT can do if the other side does not want competition on a particular route. Nevertheless, DOT has had important successes in recent years in increasing the number of flights on existing routes, in opening up a number of cities to international traffic, and in signing an open border treaty that eliminates all restraints on international traffic between the United States and Mexico.

Even more anticompetitive than the restrictions on international traffic, however, are the rules on foreign carriers that fly domestic routes. Currently, no foreign carrier may fly a domestic passenger on a domestic route. This prohibition is virtually airtight. For instance, British Airways has a flight that flies from London to New York and then on to Miami. Yet no passenger is allowed to fly from New York to Miami on British Air unless he has London in his itinerary.

There is no reason to continue restrictions on these foreign carriers. This should be the first priority of anyone who is serious about reform in the airline industry, and the time is ripe to address this issue. A large number of foreign carriers are ready to fly domestic routes. Eliminating restrictions on foreign carriers that fly in the United States could not help but be procompetitive.

Unfortunately, protectionist airline interests have successfully lobbied both Congress and DOT to keep these restrictions in place. DOT itself has shown little interest in the past in relaxing these rules, and has strongly enforced rules restricting foreign ownership of domestic carriers. The dissatisfaction with DOT merger policy, however, has made this policy reform a more palatable choice. Indeed, the United States and Canada are renegotiating their airline treaty, and one of the items on the table is an airline free-trade agreement that would bring two more major carriers, Air Canada and Canadian Airlines, into the U.S. market and would allow U.S. carriers to compete on Canadian routes.

New Entry That Has Occurred

New and successful entry has occurred over the past ten years. It has not, however, generally happened on a route-by-route basis. Instead, entry in the deregulated airline industry takes the form of new hubs at airports such as Dayton, Charlotte, and Washington-Dulles. These hubs offer nonstop service to their "home" customers and competing connecting service for fliers in other cities. Thus, home customers are better off, because they have direct hub flights as well as the connecting, low-price service that they had before hub entry. Hubs increase competition on a great number of routes. The number of hub airports has increased from five in 1978 to twenty-five in 1988, not including several new smaller minihub airports such as Indianapolis and Syracuse.

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These events would indicate that entry into hubs, at least to this point, has been relatively easy. If entry into hubs is easy, it should prevent airlines from sustaining supracompetitive profits. Indeed, no one accuses airlines of making excess profits on their domestic route systems (in contrast to their protected international profits). In a strict accounting sense this presents something of a puzzle. It appears that carriers make money serving hub passengers and lose it on jointly provided service

to passengers on connecting flights. A solution to this puzzle is offered below.

Empirical Reviews of Recent Mergers

The two most criticized mergers have been the Northwest-Republic merger at Minneapolis and TWA-Ozark merger at St. Louis. Both mergers involved the acquisition of one hub carrier at an airport by the other. Both mergers were approved by DOT despite objections from the Department of Justice. Both led to very high levels of concentration at their respective airports.

Were consumers harmed by these acquisitions? The empirical evidence indicates that prices rose in Minneapolis but not in St. Louis. Why the difference? In Minneapolis gate space was not available (apparently largely because of contractual constraints), and Northwest did not have to worry about new entry. In St. Louis gate space was available and entry occurred (Southwest). Thus, entry was the key issue in evaluating these transactions. In Minneapolis the lack of gate space served as a barrier to entry.

These studies only measure the effects of the two mergers on passengers flying to or from the relevant city. These mergers may also have given important benefits to consumers outside the two cities. By joining two carriers, the mergers may have allowed more on-line connections, which travelers prefer, and thus may have generated more competition on a number of connecting routes. For example, the Northwest-Republic merger gave Northwest domestic feed traffic from Republic for Northwest's larger international route system running from Minneapolis and Detroit. Thus, even the Northwest-Republic merger, on balance, may have helped airline passengers.

Passengers at hub airports may pay higher prices because of market power problems. Higher fares at hubs could represent higher quality service. It could also be that these higher fares represent the most efficient way to pay for the costs of the airline system.

Why Do Passengers at Hubs Pay Higher Fares?

As discussed above, passengers at hub airports may pay higher fares because of market power problems. These higher fares could also represent higher quality service. It may also be that these higher fares represent the most efficient way to pay for the costs of the airline system.

Under the hub-and-spoke system airline services are created as joint goods, with service to and from the hub produced simultaneously with service through the hub. This is much like the way mutton and wool are produced jointly from sheep. Since these goods are produced jointly, it is not immediately apparent whether it is more efficient for passengers on connecting flights (say those traveling on Delta from Louisville to Tampa through Atlanta) to pay more or less of the costs of the flight per passenger than direct passengers (those traveling from Louisville to Atlanta and Atlanta to Tampa).

Economic theory would argue that the most efficient means of pricing such joint goods is for those customers who are relatively less sensitive to price to pay a larger share of the joint costs. In this method the costs of the product fall on those who are more likely to be willing to pay them. This is the same reason why it is efficient for long-distance phone calls to cost more during the day if the demand for business calls is less elastic than the demand for personal calls made at night. Given free entry into the creation of new hubs (which eliminates any net monopoly profits), total economic welfare may be maximized by hub passengers' paying higher prices. Indeed, passengers who pay higher prices at those hubs benefit as well, because without such a pricing structure, the hub and its convenient nonstop service for hub passengers would not exist.

Under this scenario those who are less sensitive to price and thus pay the higher prices are passengers traveling from Louisville to Atlanta or from Atlanta to Tampa. Why would these groups be expected to have relatively less elastic demands for airline services? One hypothesis is that many of the passengers traveling from Louisville to Tampa are on vacation, so that they would have a large number of vacation options and thus have a more elastic demand for travel. Passengers flying the shorter routes—Louisville to Atlanta or Atlanta to Tampa—are more likely to be business travelers with less elastic demand for airline services.

Applying the joint-goods model helps to explain some of the anomalies in the empirical data. For instance, high prices in Atlanta can be explained by the nature of connecting traffic through that city. A larger number of passengers traveling through

Atlanta are likely to be Florida vacation travelers with high elasticities of demand. Atlanta passengers would then have relatively low elasticities of demand and would pay a higher share of the fixed costs of operating a hub in Atlanta. Similarly, low hub prices in Denver can be explained by Denver's popularity as a vacation destination and the relative elasticity of demand of Denver-bound passengers.

The joint-goods model implies that focusing on individual routes, as the empirical literature in this area does, may be asking the wrong question. Someone has to pay the overhead costs of airline service, and hub passengers may be the ones who do so most efficiently.

Conclusion

Airline deregulation has been and continues to be a great success story. Competition, largely across hubs, is bringing customers possibly the best service the infrastructure will allow. Perhaps the one major mistake made in managing deregulation was allowing the Northwest-Republic merger, although even that is arguable. In any event, it is too late to undo this combination.

This most obvious and appropriate policy remedy is to allow foreign carriers to fly domestic routes in the United States. While DOT has made some progress on the international front, there is a great deal of work left to be done. It would also be helpful if the federal government would more clearly define property rights in the market for slots to facilitate efficient transactions. Finally, it may be desirable to tax frequent-flier benefits to eliminate any distortionary effects they might be generating.

Selected Readings

Bittlingmayer, G. "Efficiency and Entry in a Simple Airline Network." *International Journal of Industrial Organization*, Vol. 8 (1990).

Borenstein, S.J. "Hubs and High Fares: Airport Dominance and Market Power in the U.S. Airline Industry." *RAND Journal of Economics*, Vol. 20 (1989).

Darby, M.R. and Karni, E. "Free Competition and the Optimal Amount of Fraud." *Journal of Law and Economics*, Vol. 16 (1973).

Secretary's Task Force on Competition in the U.S. Domestic Airline Industry. Washington, D.C.: Department of Transportation, February 1990.