

---

# FRBSF ECONOMIC LETTER

Number 2002-01, January 18, 2002

## Competition and Regulation in the Airline Industry

The events of September 11 have had some of their worst economic effects on the airline industry, leading to a dramatic fall-off in passenger demand and substantially higher costs. But even before that day, the industry was facing bad times, with few airlines anticipating profitable performances in 2001. Some have argued that deregulation has contributed to the industry's problems, and, furthermore, to problems for passengers.

This *Economic Letter* analyzes this issue by summarizing the history of airline deregulation, by illustrating how it has affected the nature of competition in the industry, and by discussing how potential policy changes could affect competition in the future.

### Regulations and deregulation

Before deregulation of the airline industry began in 1979, the Civil Aeronautics Board controlled both the routes airlines flew and the ticket prices they charged, with the goal of serving the public interest. With deregulation, any domestically owned airline that was deemed "fit, willing, and able" by the Department of Transportation (DOT) could fly on any domestic route. The primary regulatory role of the DOT changed from approving whether an airline was operating in the public interest to deciding whether an airline was operating in accordance with safety standards and other operating procedures.

While route schedules and pricing for the airline industry have been largely deregulated for over 20 years, many other aspects of the industry are still highly regulated. Perhaps the most important regulation comes from local governments, which own and manage the airports in their region and therefore control key bottlenecks to airport services: access to boarding gates and runways. Most local airport commissions allocate gates without a formal market mechanism, such as a bidding process; often they require proof that the airline would operate in the best interest of the public.

In addition, international routes have been deregulated only gradually, through negotiated bilateral open-skies agreements, which generally allow airline companies from the two countries in question to fly between those countries without restrictions.

These open-skies agreements do not create a fully competitive market as they do not allow foreign carriers to transport passengers within the United States or vice versa.

Finally, certain federal regulations pertain to specific airports. For instance, airports in Chicago, New York, and Washington, D.C., are subject to federal "slot" regulations, where airlines must obtain a slot in order for their aircraft to land or take off. These regulations, which were designed to avoid congestion at the nation's busiest airports, have lagged behind market realities. For instance, the nation's busiest airport, Atlanta's Hartsfield International, is not even covered by slot regulations. Service to some small isolated markets also is subsidized and regulated by the federal government.

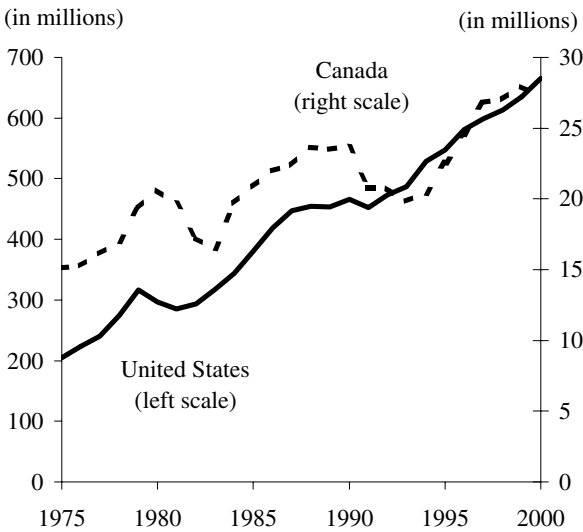
In summary, even though the end-consumer for airline tickets faces a market-driven menu of prices and services, key inputs into the industry are allocated using non-market mechanisms. Thus, 22 years after airline deregulation, the airline market is still partly regulated.

### Nature of airline competition

Since the start of deregulation in 1979, the U.S. airline industry has grown tremendously. Figure 1 shows the number of domestic U.S. airline passengers and, for comparison purposes, the same figures for Canada, both over the past 25 years. The U.S. experienced a 225% growth over this period, while Canada, which deregulated its airline industry later and has always had much less competition than the United States, saw a much smaller growth rate of 80%. Thus, it appears that deregulation, particularly in combination with competition, can spur growth in the airline industry.

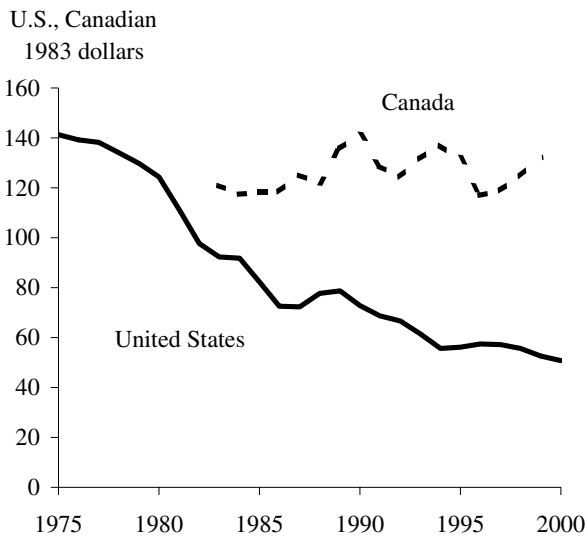
Figure 2 shows the average price in constant 1983 dollars for a domestic airline ticket over the same period for both the U.S. and Canada. Again, average prices have fallen consistently in the U.S. but have remained constant in Canada, suggesting a large benefit to consumers from U.S. practices. Although average U.S. fares have fallen, unrestricted fares often paid by business travelers are generally thought to have risen steadily. This has led some observers to argue that airline competition has not benefited

**Figure 1**  
**Number of domestic airline passengers**



Source: U.S. Bureau of Transportation Studies, Canada Aviation Statistics Centre.

**Figure 2**  
**Average domestic airfare**



Source: U.S. Bureau of Transportation Studies, U.S. Bureau of Labor Statistics, Canada Aviation Statistics Centre, Bank of Canada Review.

all consumers. But a counterargument is that business travelers paying full fare also get a superior product, in terms of flexibility and service. Moreover, the increased demand for air travel suggests that there are additional new passengers who clearly find air travel their preferred option and therefore are better off as a result of deregulation. Thus, even if competition in the U.S. has not benefited every consumer, it has succeeded in increasing the volume of travel and lowering average prices, which has almost certainly been beneficial on average.

Deregulation spurred changes in the structure of airlines. Following deregulation, most of the largest

airlines began to operate on a “hub-and-spoke” system; for example, United’s hubs include Chicago’s O’Hare, Denver, and Washington’s Dulles, where travelers from a “spoke” city typically will make connections. The hub-and-spoke system has allowed for efficient connections for passengers from small- and mid-sized cities, but it also has increased airline concentration at hubs. The net effect has been to increase the choice of carriers at non-hub cities and to increase the frequency of service but also to increase the market concentration at hub cities.

Over the last 20 years, many of the nation’s biggest airlines have shut down or been acquired by other airlines. The list includes Eastern, Pan Am, TWA, Republic, Piedmont, Ozark, and Texas Air. Because of the huge amount of exit, some observers argue that the airline industry is inherently unstable and requires government intervention. It is true that profits in the airline industry can fluctuate wildly, precipitating exit. For instance, while United reported a record net loss of \$542 million in the third quarter of 2001, they reported earnings of \$425 million and \$359 million in the corresponding quarters of 1998 and 1999, respectively. The reason for these fluctuations is that an airline’s costs are largely driven by labor and fuel, which are fixed in the short run. Hence, moderate fluctuations in demand, such as those caused by the events of September 11, can hugely affect profits. The robust earnings of most airlines in 1998 and 1999 can be traced both to the booming economy that spurred demand, particularly for high-fare business travelers, and to low fuel prices.

While profits are volatile, many industries with volatile profits—ranging from oil exploration to computer software—operate without substantial government regulation. Moreover, free markets generally work well for industries with large fluctuations, because the fluctuations provide incentives for firms to innovate in response to changes in demand and costs. A good example in the airline industry is Southwest, one of the fastest growing airlines in recent years. Southwest operates very differently from many other airlines: it does not use a hub-and-spoke system, its fares are generally lower and much more uniform, its fleet is homogeneous, its turnaround time is shorter, and it does not offer meal service. In spite of the recent downturn in demand for airlines, Southwest has not eliminated any of its routes, and it reported a third quarter 2001 net profit of \$82.8 million. While it remains an open question as to which of these innovations made Southwest relatively successful, free markets provide incentives for innovations to spread, thereby increasing efficiency.

Moreover, there is little evidence that the airline industry is a “natural monopoly,” i.e., an industry where only one firm is likely to survive in a com-

petitive environment. Figure 3 plots the Herfindahl index for a representative long route (San Diego–Boston) as well as for the U.S. as an aggregate over the 1990s. The Herfindahl is a measure of industry concentration; a value of 1 corresponds to a monopoly; 0.5 corresponds to an industry with two equal-sized firms, 0.33 to an industry with three equal-sized firms, etc. The Herfindahl indices have been very stable over time, with the industry nationally having the equivalent of 10 equal-sized firms and the San Diego–Boston route having the equivalent of four to five equal-sized firms. In spite of the exit, the level of competition has remained roughly constant over the last several years.

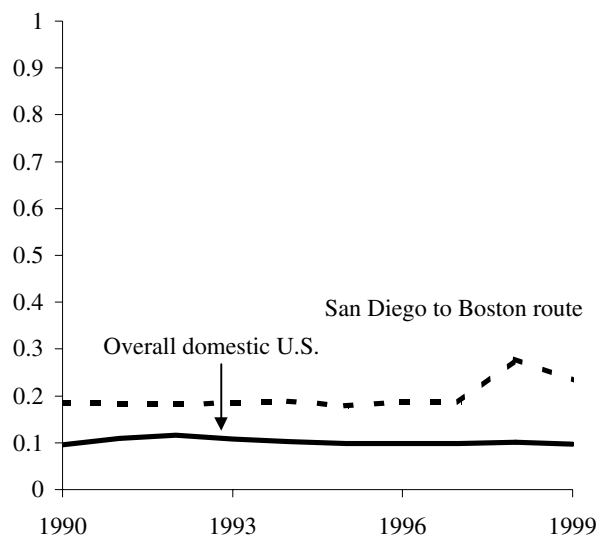
### Impact of policies on competition

Because the airline industry is a complex mix of a competitive and regulated industry, several policy choices could affect its level of competition. A central policy choice is the mechanism for allocating airport boarding gates and facilities. Many airport commissions rely on non-market mechanisms to allocate these scarce resources. Changes in policies by these commissions to allow for competitive bidding for boarding gates and landing rights might encourage competition among airlines, and it also might encourage airport authorities to increase supply when bid values are higher than costs.

Antitrust policy also may affect the level of competition. A little over a year ago, United announced plans to acquire US Airways. These plans were later abandoned after the government decided to challenge the merger. Most observers anticipate that future merger attempts are likely. There is significant statistical evidence that airfares increase as market concentration increases, thereby harming consumers. However, concentrated markets also benefit some consumers by creating bigger networks with more frequent and convenient flights. Moreover, mergers also provide incentives for efficient managerial skills and business practices to dominate. In that mergers lead to concentrated markets, antitrust policies must balance these conflicting needs when deciding whether to approve a merger.

A third significant policy dimension involves restrictions on substantial foreign ownership of airlines and on domestic flights by foreign-owned airlines. Allowing foreign ownership of airlines could increase the level of competition for both international and domestic flights. As foreign airlines already fly to the United States, they are subject to

**Figure 3**  
**Airline market concentration**



Source: compiled by author from 3rd quarter U.S. Department of Transportation data.

U.S. safety and security regulations. However, while the current open-skies agreement between Canada and the United States allows Canadian carriers to pick up passengers in the United States, it does not allow Canadian carriers to pick up passengers in Portland and drop them off in Seattle; rather, they can only pick up passengers in Portland and drop them off in Vancouver. This limits the ability of a Canadian carrier to gain the hub-and-spoke economies of scale that might improve its competitive edge on the Portland to Vancouver market or the Seattle to Vancouver market, and also potentially on the Portland to Seattle market.

### Conclusion

The airline industry today operates in an environment where firms set prices and domestic routes given market conditions, but where access to some key inputs, such as airport boarding gates, are determined by non-market mechanisms. While profits have fluctuated a great deal, the industry in the U.S. has been characterized by steady growth, falling prices, and moderate concentration, suggesting a positive impact of deregulation. Policies to allocate some key inputs on a market basis may yield even more efficient outcomes.

**Gautam Gowrisankaran**  
Economist

ECONOMIC RESEARCH  
FEDERAL RESERVE BANK  
OF SAN FRANCISCO

PRESORTED  
STANDARD MAIL  
U.S. POSTAGE  
PAID  
PERMIT NO. 752  
San Francisco, Calif.

P.O. Box 7702  
San Francisco, CA 94120  
Address Service Requested

Printed on recycled paper  
with soybean inks



**Index to Recent Issues of *FRBSF Economic Letter***

<b>DATE</b>	<b>NUMBER</b>	<b>TITLE</b>	<b>AUTHOR</b>
5/18	01-15	Japan's New Prime Minister and the Postal Savings System	Cargill/Yoshino
5/25	01-16	Monetary Policy and Exchange Rates in Small Open Economies	Dennis
6/1	01-17	The Stock Market: What a Difference a Year Makes	Kwan
6/15	01-18	Asset Prices, Exchange Rates, and Monetary Policy	Rudebusch
7/6	01-19	Update on the Economy	Parry
7/13	01-20	Fiscal Policy and Inflation	Daniel
7/20	01-21	Capital Controls and Exchange Rate Stability in Developing Countries	Glick/Hutchison
7/27	01-22	Productivity in Banking	Furlong
8/10	01-23	Federal Reserve Banks' Imputed Cost of Equity Capital	Lopez
8/24	01-24	Recent Research on Sticky Prices	Trehan
8/31	01-25	Capital Controls and Emerging Markets	Moreno
9/7	01-26	Transparency in Monetary Policy	Walsh
10/5	01-27	Natural Vacancy Rates in Commercial Real Estate Markets	Krainer
10/12	01-28	Unemployment and Productivity	Trehan
10/19	01-29	Has a Recession Already Started?	Rudebusch
10/26	01-30	Banking and the Business Cycle	Krainer
11/2	01-31	Quantitative Easing by the Bank of Japan	Spiegel
11/9	01-32	Information Technology and Growth in the Twelfth District	Daly
11/16	01-33	Rising Junk Bond Yields: Liquidity or Credit Concerns?	Kwan
11/23	01-34	Financial Instruments for Mitigating Credit Risk	Lopez
12/7	01-35	The U.S. Economy after September 11	Parry
12/14	01-36	The Economic Return to Health Expenditures	Jones
12/21	01-37	Financial Modernization and Banking Theories	Kwan
12/28	01-38	Subprime Mortgage Lending and the Capital Markets	Laderman