

January 1999

AVIATION COMPETITION

Effects on Consumers From Domestic Airline Alliances Vary



**Resources, Community, and
Economic Development Division**

B-280704

January 15, 1999

The Honorable John McCain
Chairman, Committee on Commerce,
Science, and Transportation
United States Senate

The Honorable Slade Gorton
Chairman, Subcommittee on Aviation
Committee on Commerce, Science,
and Transportation
United States Senate

Early in 1998, the six largest U.S. airlines, which account for nearly 70 percent of domestic airline traffic, announced their intentions to form three alliances, in which the partners—Northwest and Continental, Delta and United, and American and US Airways—would cooperate on some aspects of their business (see app. I for information on the airlines' market shares). These alliances vary from a limited marketing arrangement, such as reciprocal frequent flyer programs, to more complex agreements, such as those involving "code-sharing"¹ or one partner's ownership of an equity share in the other partner's business. The airlines say that these alliances will benefit consumers through expanded route networks and combined frequent flyer programs. Others, however, say that the alliances will decrease competition, ultimately reducing passengers' choices and increasing fares. Concerned over the potential anticompetitive effects of the alliances, the Department of Transportation is reviewing them, and the Department of Justice filed suit in October 1998 to prevent Northwest from acquiring voting control of Continental. Justice did not, however, request a temporary injunction precluding the transfer of voting control.

At your request, we have been examining the implications of these alliances. On June 4, 1998, we offered the preliminary results of our analysis in testimony before the Subcommittee on Aviation, Senate

¹Code-sharing allows an airline to sell seats on its partner's plane as if they were its own, enabling the airline to expand its route network without adding any planes. For example, if Northwest and Continental have a code-sharing agreement and Northwest flies from Minneapolis to Duluth (and Continental does not), and Continental flies from Amarillo through Houston to Minneapolis (and Northwest does not), then both airlines could sell tickets from Amarillo to Duluth as their own flights, and each computer reservation system would indicate that both airlines provide seamless ("on-line") service to these cities. Thus, both Continental and Northwest would increase their route networks without adding any new flights. The computer reservation system could also show this flight a third time as a connecting flight with segments served by both airlines.

Committee on Commerce, Science, and Transportation.² This report expands on that testimony and offers more information about the implications of the alliances. As agreed with your offices, the report (1) describes the status of each of the alliances, (2) examines, for each alliance, the potential beneficial and harmful effects on consumers, and (3) examines the authority of the departments of Justice and Transportation to review these alliances and the status of their reviews.

Results in Brief

All six airlines have begun implementing various aspects of their agreements. Northwest completed its acquisition of equity in Continental, and the two airlines began implementing their reciprocal frequent flyer programs. Since we testified in June 1998, however, Northwest and Continental have revised their agreement. Under the terms of the revised agreement, Northwest altered its equity investment in Continental, agreed to forgo its right to place someone on Continental's Board of Directors, and agreed to forgo code-sharing with Continental in certain domestic markets. Even though Northwest and Continental have implemented their agreement, it remains under review at both Justice and Transportation. The alliance between United Airlines and Delta Air Lines was originally to include code-sharing, but it has been scaled back to an arrangement involving reciprocal frequent flyer programs and access to airport lounges. This arrangement, which the airlines began implementing in September 1998, is much the same as the one American Airlines and US Airways proposed and began implementing in August 1998.

The alliances may have both beneficial and harmful effects on consumers. And because they differ in scope, their possible effects vary. Officials from Northwest and Continental said that their alliance will benefit consumers through expanded route networks, more frequency options (that is, more flights on the same routes), improved connections, and enhanced frequent flyer programs. Our analysis showed that the alliance could result in new, possibly improved, route options, and the alliance's extended frequent flyer program may benefit members of each airline's program. We also found that this alliance will create some "new" markets that are not already served by other airlines. However, our analysis indicated fewer new markets than the alliance partners estimated, and it showed that these new markets will serve relatively few passengers. On the other hand, consumers would be harmed if competition is reduced. But it is difficult to determine whether the partners in the alliance will continue to compete or

²Aviation Competition: Proposed Domestic Alliances Raise Serious Issues (GAO/T-RCED-98-215, June 4, 1998).

whether the alliance will encourage them to act in a manner that may reduce competition. Airline officials have said that the partners will continue to compete. However, industry experts have raised concerns that competition will likely decline over time as firms recognize their interdependence and maintain prices above the competitive level. Our analysis indicates that if Northwest and Continental do not act independently, competition could decline in 63 markets that served 2 million passengers in 1997, and the two airlines could also increase by 5 percent the number of markets that they dominate. According to industry experts, airlines that achieve dominant market positions can drive out competitors with smaller shares and eventually raise fares. In addition, we recently reported that certain airline marketing practices, such as frequent flyer programs—a feature common to all of the alliances—can make competitive entry more difficult for other airlines, especially in markets where one airline has a substantial share of the market, thus possibly limiting the benefits of deregulation in the airline industry. However, we have not been able to quantify the effects on competition that such practices would exert.

The departments of Justice and Transportation are separately reviewing the three alliances under different statutory authorities and have different remedies available to them. On October 23, 1998, Justice filed a civil antitrust action to prevent Northwest from acquiring or holding a majority of Continental's voting stock. Justice said in its complaint that Northwest's gaining control would lessen competition in interstate trade and commerce and unreasonably restrain trade. Justice believed that the alliance would substantially diminish both airlines' incentives to compete against each other and would cause consumers to pay higher prices and receive lower-quality service in some markets. Justice will review other aspects of the Northwest-Continental alliance, as well as the other two alliances, using guidelines that are applied to traditional mergers, but it is under no timetable for these reviews. The Congress recently authorized Transportation to impose waiting periods before certain joint venture arrangements involving major airlines, such as frequent flyer programs, can be effective. Transportation imposed a waiting period on the frequent flyer and code-sharing aspects of the Northwest-Continental alliance under this new authority but eventually agreed that the airlines could proceed with their frequent flyer program. Transportation officials say that they have received information about the United-Delta and American-US Airways alliances' frequent flyer agreements, which are already in effect. Transportation will request additional information if it decides the information received is not sufficient and if the airlines propose to extend

their alliances to include code-sharing. Transportation also has the authority to prohibit unfair methods of competition in the airline industry, which it can use in reviewing alliances after they have been implemented.

Background

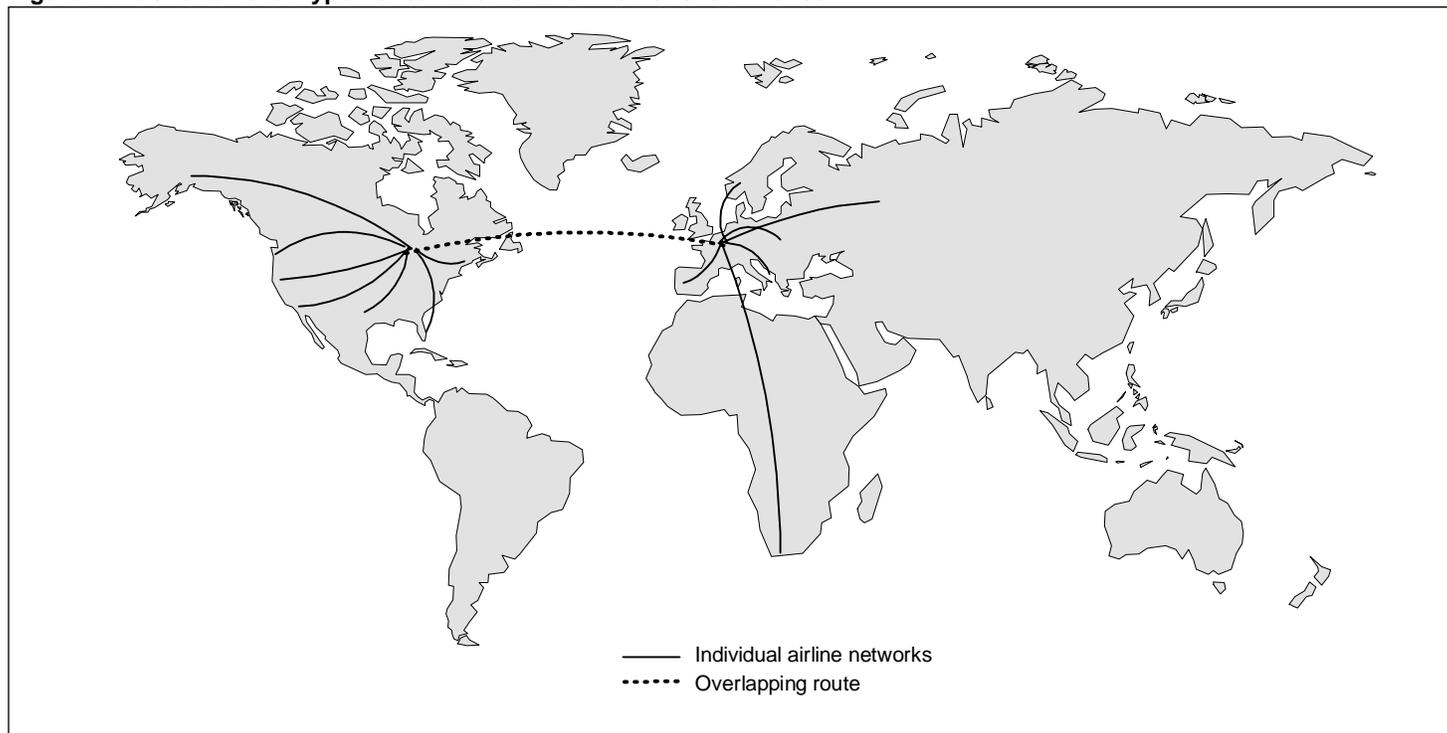
Two or more airlines may enter into an alliance to increase their revenues and the number of passengers they carry. Code-sharing is one type of alliance. It can be an important marketing tool for airlines because it allows the code-sharing partners to replicate the “seamless travel” that can be provided by a single airline, known as “on-line” service. Airline passengers prefer this type of service because it allows the convenience of single ticketing and check-in, among other things.³ For a code-sharing flight, each partner sets its own fare for the entire trip, covering both the segment it flies and the one its partner flies.

In recent years, alliances among airlines have become very common in international aviation because they allow airlines to enter markets that would be (1) too expensive to serve with their own aircraft or (2) restricted under a bilateral aviation agreement with another nation.⁴ The Department of Transportation (DOT) reported that there were 74 active alliances between U.S. and foreign carriers as of June 1998. In the simplest case, an international code-sharing alliance links the route network of one airline with the route network of another, forming an end-to-end alliance with little overlap. Figure 1 shows how such an alliance links two airlines, one with an extensive route network in the United States and the other with an extensive route network in Europe and Africa.

³Similar conveniences can be obtained between two airlines that have certain agreements, commonly referred to as “interline agreements.” Interline agreements provide for the mutual acceptance by the participating airlines of passenger tickets, baggage checks, and cargo waybills, as well as establish uniform procedures in these areas. These agreements are common, but not universal, among the major U.S. airlines. All major U.S. airlines except for Southwest have interline agreements. According to the Department of Transportation, there are important differences between code-sharing and interline agreements. For example, interline agreements typically do not include reciprocal frequent flyer and airport lounge rights, and airlines will generally not hold outgoing connecting flights to wait for delayed incoming flights. Most importantly, however, fares for code-sharing flights are generally much cheaper than for interline flights. See pp. 19-20 for additional information on the relative prices of interline and code-sharing flights.

⁴According to United, its decision to enter a particular international market tends to be revenue-based and considers such factors as the airline’s overall network size and presence at that city. Certain markets may simply be too small to support head-to-head alliance competition.

Figure 1: Illustration of a Hypothetical End-To-End International Alliance



In our previous work, we found that alliances between U.S. and foreign airlines that involved code-sharing in a large number of markets did benefit the alliance partners. The alliance generated large gains for the partners in terms of passengers and revenues, mainly at the expense of other airlines.⁵ We also found that although consumers benefited from conveniences such as shorter layovers, the data were insufficient to determine the effects of the alliances on fares in the short term and on competition and fares in the long term.

Domestically, code-sharing alliances have generally occurred between major U.S. airlines and regional commuter airlines that transport passengers, usually from smaller communities to the cities served by the major carriers. Similar to international alliances, these alliances generally link end-to-end networks without creating a significant overlap in service. For example, United Airlines has a code-sharing agreement with Atlantic Coast Airlines to bring passengers into its hub at Washington Dulles

⁵International Aviation: Airline Alliances Produce Benefits, but Effect on Competition Is Uncertain (GAO/RCED-95-99, Apr. 6, 1995).

Airport. Additionally, several major U.S. airlines have used code-sharing in a limited number of markets. For example, in 1994, Continental and America West airlines entered into a limited code-sharing agreement, and in 1996, Northwest and Alaska Airlines also entered into a limited code-sharing agreement.

The federal government has limited authority over proposed airline alliances. In the international sector, the routes that airlines can fly, the frequency of their flights, and the fares they can charge are governed by 72 bilateral agreements between the United States and other countries. Many of these agreements are very restrictive. Since the late 1970s, U.S. policy has been to negotiate agreements that substantially reduce or eliminate bilateral restrictions (“open skies” agreements). In the domestic sector, however, the Airline Deregulation Act of 1978 generally eliminated the government’s authority over airline routes, frequencies, and pricing. Under new legislation passed in October 1998, DOT has the authority to impose an initial 30-day waiting period, which it may extend another 150 days for joint ventures involving code-sharing between major airlines.⁶ This authority does not limit the Department of Justice’s (DOJ) authority to enforce the antitrust laws. DOT may also investigate whether an alliance is an unfair method of competition.

Status of the Alliances: All Three Alliances Have Been Initiated

Since we testified in June 1998, each of the three domestic alliances has begun to implement at least part of its agreement. On November 20, 1998, Northwest and Continental announced that Northwest had completed its acquisition of the equity position in Continental. The two airlines also announced that they had revised their agreement and would implement the marketing aspects of their alliance in December 1998. United and Delta and American and US Airways have begun to implement their alliances, although the United-Delta proposal no longer includes code-sharing. Like the American-US Airways proposal, it is now limited to offering consumers reciprocal frequent flyer and airport lounge benefits. The alliance between Northwest and Continental airlines remains under review at both DOJ and DOT, which has requested additional information from each of the six airlines on the frequent flyer arrangements with its respective alliance partner.

⁶P. L. 105-277, sec. 110(f). Generally, the joint venture agreements subject to this waiting period include only those that were entered into by a major airline after Jan. 1, 1998, and involve code-sharing, certain leasing arrangements, frequent flyer programs, and other cooperative working arrangements designated by DOT.

Northwest and Continental Have Begun to Implement Their Alliance Agreement

On November 20, 1998, Northwest and Continental announced that Northwest had completed the acquisition of 8.7 million shares of Continental's stock, which it then deposited in a voting trust.⁷ The agreement announced on that date is somewhat different from that originally announced by the airlines in January 1998. According to the airlines, under the new terms of the agreement between them, Northwest will acquire less than a majority of the voting control of Continental,⁸ forgo its right to place someone on Continental's board of directors, and forgo code-sharing with Continental in certain hub-to-hub domestic markets. Continental said that to protect its stockholders, its board has adopted a shareholder rights plan that will become effective if 15 percent or more of its voting stock is acquired by a single investor.

Nevertheless, the closing of the stock acquisition represented a major step toward implementing the "strategic global alliance" that the airlines announced in January 1998 to connect their route systems. The two airlines announced that they would accept code-sharing bookings starting December 12, 1998, with code-sharing flights to Japan beginning December 29, 1998, and to other destinations beginning January 7, 1999. The code-sharing plan ultimately will include the airlines' international code-sharing partners, such as Air China⁹ and KLM Royal Dutch Airlines.¹⁰

⁷According to Northwest and Continental officials, the voting trust means that Northwest's shares will generally be voted in proportion to the votes of the non-Northwest shareholders. According to airline officials, except in exceptional circumstances, the outcome of a vote will not be affected. The voting trust ends after 6 years, and Northwest has agreed on significant voting restrictions for 4 years thereafter. Northwest has also agreed to vote for a majority of independent directors on Continental's board. After 10 years, Northwest can exercise the full power of its ownership.

⁸Northwest's equity purchase equates to approximately 46 percent of the fully diluted voting rights rather than 51 percent as originally proposed. (Fully diluted voting rights are those adjusted for the conversion into common stock of all convertible securities.) Under the terms of the November agreement, certain partners of the original holders of that stock retained approximately 5 percent of the total stock but granted Northwest a "limited proxy" to vote these shares. According to a Continental official, this means that these shares may be voted generally in accordance with Northwest's wishes only in extraordinary circumstances (e.g., matters that would materially affect Northwest's ownership position, such as potential mergers, recapitalizations, or liquidations) or in circumstances where Northwest votes for directors in accordance with the recommendation of Continental's board, in which limited cases they would be voted as directed by Northwest. DOJ filed an amended complaint on Dec. 18, 1998, to reflect Northwest's consummation of its stock purchase agreement and changes made to various agreements by the parties involved in the transaction. The amended complaint alleges that Northwest would still own more than 50 percent of the fully diluted voting power over Continental.

⁹Northwest and Air China, the largest airline in China, announced their code-sharing arrangement in May 1998, including Alaska Airlines, Continental, and America West. The arrangement gives Alaska and America West their first Asian code-sharing partner, Continental its first access to mainland China, and Northwest improved access to China.

¹⁰In Jan. 1993, DOT granted antitrust immunity to the Northwest-KLM alliance in conjunction with the U.S.-Netherlands open skies accord.

Each airline has a separate code-sharing agreement with America West¹¹ and may independently pursue other domestic alliances.¹² The alliance will also include the airlines' regional partners, Northwest AirlinK,¹³ in which Northwest holds some equity, and Continental Express, which is wholly owned by Continental. As part of the agreement, the airlines will also undertake other cooperative activities, including marketing and coordinating their flight schedules to improve connection times. Airline executives stated that they will not coordinate pricing or capacity, and they submitted their alliance proposal to DOJ under the Hart-Scott-Rodino Antitrust Improvements Act of 1976¹⁴ (Hart-Scott-Rodino Act) as if it were a full merger. Northwest and Continental invited DOJ to review the transaction under its stringent merger guidelines.

In addition, the airlines established reciprocal frequent flyer programs, allowing members to earn and redeem their miles on either carrier. Beginning December 6, 1998, members of each airline's frequent flyer programs can earn miles for travel on the other airline's flights and can begin redeeming miles on February 1, 1999, for travel beginning on March 1, 1999. Both airlines announced several changes to their frequent flyer programs, as well. For example, members will be able to redeem mileage at reduced levels and travel during off-peak times. At other award levels, the airlines will have fewer blackout dates (when frequent flyer awards may not be used). On November 21, 1998, each airline opened its club facilities to members of the other airline's clubs, thereby expanding the number of airports where members can use clubs.

Northwest's principal service areas are the Midwest and Midsouth, while Continental's are the Northeast and Southwest. Figure 2 shows the percentage share of departing passengers that the Northwest-Continental alliance, had it been in effect in 1997, would have carried. It indicates that the Northwest-Continental alliance would carry large percentages of passengers (i.e., would have relatively large market strength) in the upper Midwest, South, and Northeast. According to the airlines, these were

¹¹America West and Continental have had a relatively limited code-sharing agreement since 1994. The agreement has grown from 45 to 72 route segments, allowing Continental to place its code on America West's flights west of Phoenix and Las Vegas and allowing America West to place its codes on Continental's flights east of Houston, Cleveland, and Newark.

¹²Alaska Air Group, Inc., owners of Alaska Airlines and Horizon Airlines, has a code-sharing agreement with Northwest and recently agreed to one with KLM. The Alaska—Northwest code-sharing agreement covers all of Northwest's markets and Alaska's feeder markets (routes into Seattle and Los Angeles through Horizon Airlines, a wholly owned subsidiary of Alaska Air Group, Inc., which also owns Alaska Airlines). These routes serve to funnel Alaska's passenger traffic on to Northwest's trans-Pacific, transcontinental, and Midwest flights.

¹³The Northwest AirlinK carriers are Mesaba Airlines and Express Airlines I. Code-sharing with other regional partners will have to be negotiated separately.

¹⁴15 U.S.C. § 18a.

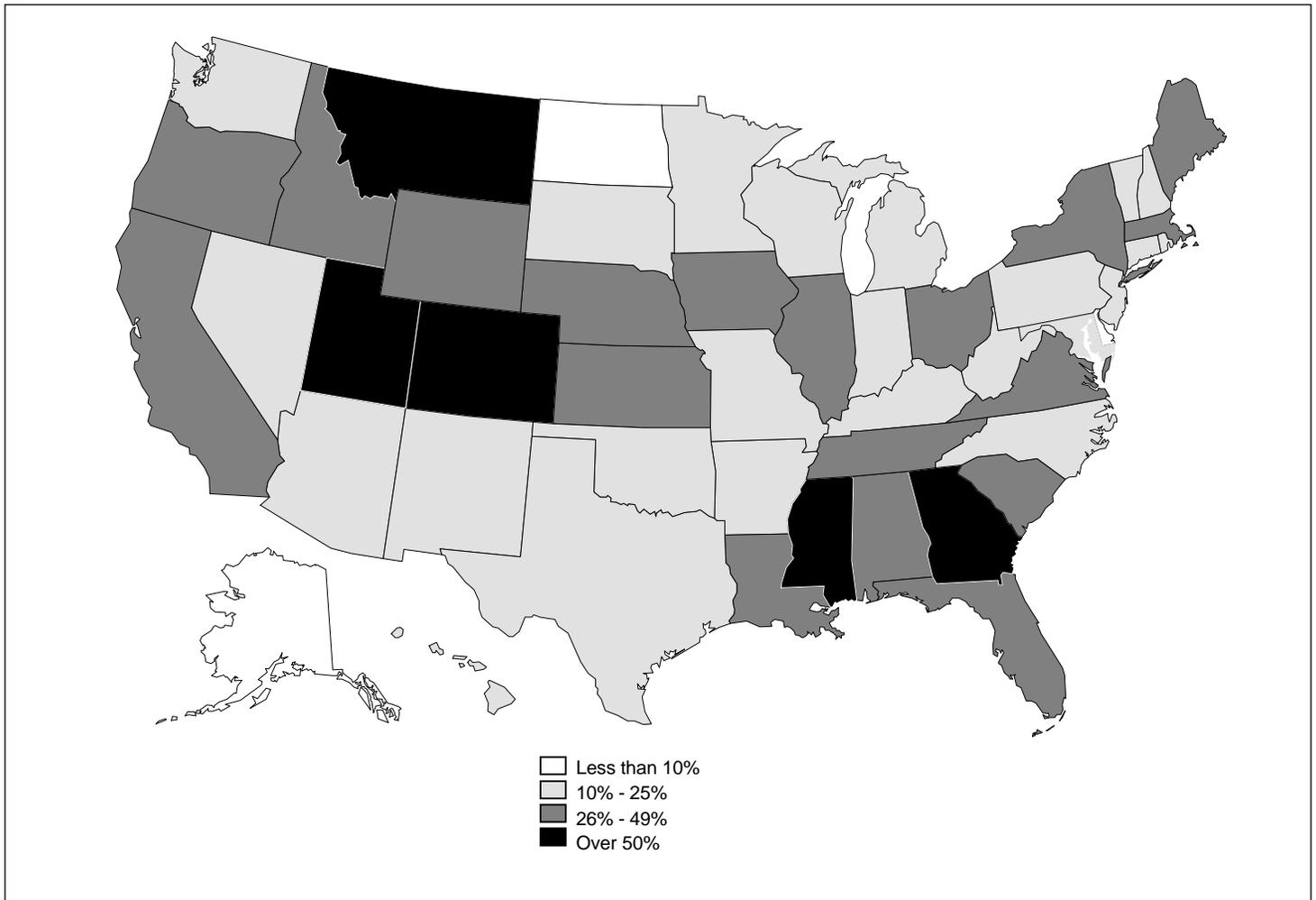
essentially preexisting market shares of Northwest and Continental, respectively, and the market shares in these regions did not increase materially as a result of the alliance.

Under the alliance, the two airlines combined carry approximately 15 percent of the total domestic passenger market. Such a combination effectively creates the second largest domestic market share (in terms of the number of passengers carried), behind Delta's 18 percent and ahead of United's 13 percent. (See app. I for more detailed information on the domestic market shares of U.S. airlines.)

United and Delta Have Begun Implementing a More Limited Alliance Than Originally Proposed

In April 1998, 3 months after Northwest and Continental proposed their alliance and investment agreements, United and Delta announced their plan to form a global alliance. This alliance would have linked the two largest domestic airlines through code-sharing and reciprocal frequent flyer programs. Moreover, as envisioned, it would have produced a larger combined market share than either of the other alliances—almost 31 percent of domestic passengers. It would have joined United's extensive route networks in the West and Midwest with Delta's similarly extensive networks in the East, Southeast, and Southwest. Figure 3 shows the percentage share of departing passengers that the United-Delta alliance, had it been in effect in 1997, would have carried. It indicates that the alliance, as originally proposed, would have had market strength virtually nationwide.

Figure 3: Percentage of Each State's Departing Passengers That the Originally Proposed United-Delta Alliance Would Have Carried



Note: Figure 3 is based on the alliance's share of the number of departing passengers carried by all major airlines, by state, during 1997. In 1997, the major airlines carried 85.8 percent of all passengers enplaned in the United States.

Source: GAO's analysis of information provided by Data Base Products, Inc.

On September 1, 1998, however, Delta and United announced that they had discontinued discussions concerning code-sharing arrangements.¹⁵

¹⁵On Aug. 17, 1998, Delta's board said that it would not grant an Air Line Pilots Association proposal to convert its existing nonvoting seat on the board to full voting status.

The two airlines implemented their reciprocal frequent flyer programs on September 1, 1998, allowing passengers who fly on either airline to choose the program where they accrue and redeem their miles.

American-US Airways Began Implementing Their Alliance in August

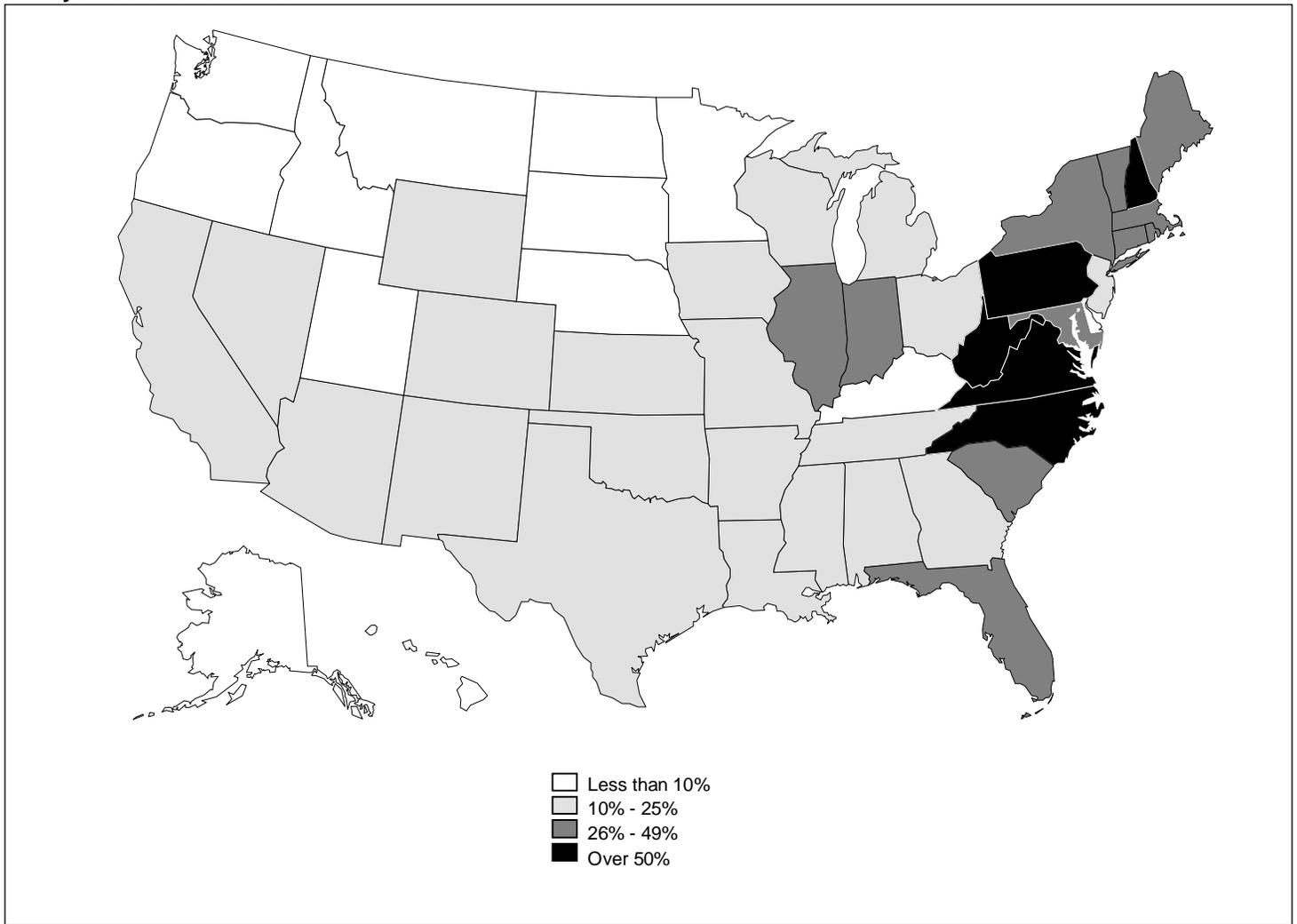
Also in April 1998, 3 months after Northwest and Continental announced their alliance, American Airlines and US Airways announced that they had agreed on a limited marketing relationship involving their frequent flyer programs and club facilities. The airlines began implementing the frequent flyer agreement in August 1998. The airlines further announced a special methodology for allocating costs between the two airlines on interline flights. According to US Airways, the methodology allows each airline to recover its costs for the segment it flies and to divide revenues in the same proportion. Airline officials have said that they may consider some very limited code-sharing with their regional partners, American Eagle and US Airways Express.¹⁶

American and US Airways offer greater market presence in different parts of the country. US Airways has a strong presence in the Northeast, Mid-Atlantic, and Southeast, while American's network extends across much of the rest of the United States.¹⁷ Should this arrangement move beyond reciprocal frequent flyer programs to code-sharing, the alliance's market share would be about 22 percent of total domestic passengers. Figure 4 shows the percentage share of departing passengers that the American-US Airways alliance, had it been in effect in 1997 and extended to include code-sharing, would have carried. It indicates that such an alliance would have had market strength mostly on the East Coast.

¹⁶According to the airlines, there has been some discussion of such code-sharing, but certain labor and commercial issues remain to be resolved. Senior management of US Airways has stated that it does not favor domestic code-sharing between the mainline divisions of US Airways and American but would consider such code-sharing as a competitive response to actions of other airlines and alliances. As of the end of Dec. 1998, the two airlines had not discussed mainline code-sharing.

¹⁷On Nov. 19, 1998, American Airlines announced that it had agreed to acquire Reno Air for \$124 million. Reno's 16-city route system extends from Oklahoma City to Anchorage and includes service to Tucson, San Diego, Los Angeles, San Francisco, Portland, and Seattle. It also serves San Jose, subleasing the gates formerly operated by American. This purchase will strengthen American's north-south route system on the West Coast. On Dec. 9, 1998, Alaska Air Group, Inc., announced that it had signed a letter of intent for the creation of a marketing partnership between its subsidiaries, Alaska Airlines and Horizon Air, and American Airlines—American Eagle. Alaska and Horizon intend to implement fully reciprocal frequent flyer relationships with American and American Eagle, allowing customers to earn and use mileage awards across each other's networks. Code-sharing by the airlines has also been discussed but is subject to labor contract provisions.

Figure 4: Percentage of Each State's Departing Passengers That a Code-Sharing Alliance Between American and US Airways Would Have Carried



Note: Figure 4 is based on the alliance's share of the number of departing passengers carried by all major airlines, by state, during 1997. In 1997, the major airlines carried 85.8 percent of all passengers enplaned in the United States. This figure also includes Reno Air's share of departures in the markets served by Reno in 1997.

Source: GAO's analysis of information provided by Data Base Products, Inc.

Alliances Could Have Beneficial and Harmful Effects on Consumers

The alliances may have beneficial and harmful effects on consumers. Because the alliances currently differ in scope, their potential benefits range from increased on-line service and more efficient routings to enhanced frequent flyer programs and access to more club facilities. Harmful effects will occur if competition is reduced. Alliance airline officials have stated that they will act independently. On the other hand, industry experts have said that they think competition between alliance partners will decline over time. It is difficult to determine what will happen in the future, but some experts' concerns are consistent with widely held economic principles and past experience in the airline industry. With code-sharing, the opportunity for harm increases with the number of overlapping markets and the number of passengers flying in these markets. Thus, an end-to-end alliance with few overlapping routes that serves fairly small markets is less likely to threaten competition than an alliance between partners that share a number of heavily traveled markets. In addition, under enhanced frequent flyer programs, it may be more difficult for would-be competitors to enter markets where the alliance partners already have a substantial market share, thus further limiting competition and the potential benefits of deregulation in the airline industry.

This section examines the potential beneficial and harmful effects on consumers of the arrangement between Northwest and Continental—the only one with plans for equity acquisition and code-sharing as of December 1998 (see app. II for a detailed description of our scope and methodology). However, the other alliances may introduce code-sharing if the Northwest-Continental proposal is implemented. Consequently, we analyzed the potential effects of the United-Delta alliance (see app. III) and of the American-US Airways alliance (see app. IV) using the same approach and framework that we applied to the Northwest-Continental alliance. We also analyzed the potential effects, on consumers and the industry as a whole, of all three alliances' implementing code-sharing (see app. V).

Northwest-Continental Alliance Could Have Both Beneficial and Harmful Effects on Consumers

Because the Northwest-Continental alliance involves code-sharing, it could benefit consumers in several ways. First, it will create new on-line destinations, even though no aircraft or flights are added. In addition, it will increase the number of flights in a market attributable to a single airline (flight frequencies) and provide better connections so that consumers can reach their destinations sooner. Finally, the alliance will give consumers more frequent flyer award destinations and access to more

club facilities. At the same time, however, the alliance creates the possibility of harm for air travelers, especially over the longer term. If competition is reduced, consumers would be harmed. Specifically, should the airlines compete less vigorously or act as one entity if Northwest acquires a majority interest in Continental, then consumers could be harmed through the decrease in competition, especially on routes where both airlines previously competed. Our analysis of the potential beneficial and harmful effects of the alliance between Northwest and Continental follows.

Alliance Could Benefit Consumers by Providing More On-Line Destinations

According to Northwest and Continental officials, their alliance will create new on-line service to 2,007 new domestic and international city pairs, thereby benefiting the approximately 3.4 million passengers who flew on these routes in 1997.¹⁸ One airline official believes that the new on-line service will divert passengers from other airlines that provide poorer connections and will stimulate new flying by passengers who previously chose not to fly. Because the alliance will convert passenger routings from interline connections to on-line connections, the official also expects the alliance partners to offer lower fares in some markets that previously could be served only on an interline basis.¹⁹ In turn, such lower fares will also stimulate travel on these routes.

Because this study is limited to domestic airline alliances, we did not analyze the impact of the alliance on Northwest's and Continental's international markets. We did, however, analyze its impact on both airlines' domestic markets and included in our review new markets that would be created through routes with one or two connections. Although the airlines also included new city pairs that would be created through routings that require three connections, we did not include these markets because we believe that the number of passengers who would book flights with so many connections is relatively small.²⁰

¹⁸According to an economic consultant for Northwest, these cities are mainly, but not exclusively, located in the United States. Included are cities served by Northwest and Continental in North and Central America, but not those in Europe, Asia, or South America.

¹⁹According to airline officials, interline fares are most frequently the sum of the fares for each airline's segment of the itinerary. Even when tickets are purchased well in advance to take advantage of possible airline discounting, such fares tend to be considerably higher than on-line fares from the same origin to the same destination. Newly created on-line fares should be less expensive than these interline fares because each airline in an alliance now has an incentive to compete on fares to attract passengers to its own airline.

²⁰We also limited our analysis of this and the other alliances in other ways. For example, using the airlines' published schedule for May 1998, we required arriving and departing flights to be scheduled within 30 and 150 minutes to qualify as potentially valid connections. For double connections, we limited our analysis to flights that connected through the partners' hubs. For additional information on our methodology, see app. II.

Our analysis showed that a code-sharing alliance between Northwest and Continental would serve considerably fewer new airport pairs than the airlines estimated. We found, first, that such an alliance could create on-line single-connection service in 74 markets that served about 400,000 passengers in 1997 (or about 15 per day per route). In 22 of these markets, the Northwest-Continental alliance would produce superior service to that already offered by a competitor. In the other 52 markets, competing airlines' existing service would be superior or at least equal to that anticipated under the alliance. At the same time, however, we found that the alliance would create no new service in any of these single-connection markets because all 74 were already served either by one of the alliance partners or by a competitor. We also found that a Northwest-Continental alliance could create 71 new double-connection markets. The Northwest-Continental alliance would provide superior service to that offered by competitors in two markets, but other competing airlines already provided superior or equal service in the other 69 markets. Table 1 provides our detailed analysis of the new on-line benefits that consumers could expect from this alliance.

Table 1: GAO’s Analysis of Airport Pairs That Would Receive New On-Line Service Through Single or Double Connections Under a Northwest-Continental Alliance

Type of new on-line service	Total markets and average number of passengers per day who would receive new Northwest-Continental service		Number of markets in which competing airlines provide superior service ^a	Number of markets in which competing airlines provide equal service ^b	Number of markets in which competing airlines provide inferior service ^c
	Number of markets	Average number of passengers per day per market in 1997			
Single-connection	74	15	10	42	22
Double-connection	71	6	54	15	2

^aSuperior service includes current direct and nonstop service by competitors between airports that Northwest-Continental could serve at best with single-connection service; and direct, nonstop, or single-connection service by competitors between airports that Northwest-Continental could serve at best with double-connection service. Direct service differs from nonstop service in that a “direct” flight makes a scheduled stop between an origin and a destination, but passengers flying between the origin and destination are not required to change planes, while a nonstop flight between an origin and a destination makes no scheduled stops en route.

^bEqual service means that competing airlines currently offer service that matches the Northwest-Continental alliance’s potential single- or double-connection service.

^cInferior service means that competing airlines currently offer (1) no service or double-connection service between airports where the Northwest-Continental alliance could offer single-connection service or (2) no service between airports where the alliance could provide double-connection service.

Source: GAO’s analysis of information provided by BACK Associates and Data Base Products, Inc.

Alliance Could Benefit Consumers by Providing More Frequencies and Improved Routings

According to Northwest and Continental officials, the alliance will provide 17,446 new on-line flight opportunities in 10,459 markets that, they say, will create additional routings in existing markets, increasing convenience and choice for their passengers and reducing travel times for an estimated 250,000 passengers. For example, Northwest and Continental say that by routing passengers from Milwaukee to Honolulu through San Francisco instead of Seattle, the alliance will shorten these passengers’ connection times by about 1.5 hours.

Our limited analysis of flight frequencies suggests that the alliance could result in new, possibly improved, route options. For various technical reasons, we were unable to duplicate the model that Northwest and Continental used to calculate the number of new routing possibilities. We note, however, that their earlier modeling of benefits included destinations other than those in the United States, causing them to overestimate the new domestic routing possibilities.

Alliance Could Benefit Members of the Airlines' Frequent Flyer Programs and Clubs

Although there is some uncertainty about the extent of the service and routing benefits under the Northwest-Continental alliance, the agreement to offer reciprocal access to the airlines' frequent flyer programs and club facilities could provide direct benefits to customers of both airlines. Passengers may choose to participate in one or both of the frequent flyer programs (either Northwest's "WorldPerks" program or Continental's "OnePass" program), but miles earned on any given alliance flight can be awarded to only one program. Travelers will not be able to combine miles from both programs to achieve an award. This reciprocal relationship should increase the value of these programs to frequent flyers because more destinations and frequencies will be available. Northwest and Continental do not expect to significantly change how they distribute frequent flyer seats, which may be different on each flight because of various market forces. According to the airlines, club members will have access to facilities at all the airports where the alliance partners have club facilities starting November 21, 1998.

Members of each airline's frequent flyer program could benefit from the alliance's ability to offer new destinations. When announcing the consummation of their alliance, both airlines announced enhancements to their programs. Northwest noted that its WorldPerks members will still be able to redeem free travel awards for as few as 20,000 miles within North America and that these awards will be available for travel during 9 months of the year instead of just 10 weeks. Northwest also announced a number of changes to its frequent flyer program, including fewer blackout dates (when frequent flyer awards cannot be used) for WorldPerks travel within North America. Continental announced that travel during off-peak times will be available at reduced mileage levels starting March 1, 1999.

Potential Harmful Effects of Alliance Depend on Whether Partners Compete Less Vigorously

According to Northwest and Continental, their alliance is unlikely to harm consumers because it is an end-to-end alliance with relatively few overlapping markets. Nevertheless, the alliance could harm consumers if it decreases competition in markets that are already served by both partners,²¹ especially in those where the alliance gives the partners a "dominant" market position (i.e., control of more than 50 percent of the market). Such an increase in market dominance is significant, according to industry analysts, who predicted that the partners might not be able to gain much market share overall but might be able to increase revenues—presumably by raising fares—in individual markets where they

²¹DOJ's lawsuit against the investment agreement between Northwest and Continental states that the acquisition would substantially diminish the incentives for the two airlines to compete against each other.

Experts Suggest Partners May Not Compete Vigorously, but Airlines Say They Will

held a dominant position.²² The Northwest-Continental alliance could also increase barriers for other airlines that might want to enter particular markets. To examine the potential harm from the alliance, we determined the extent to which each airline's routes overlapped with those of its alliance partner by analyzing 1997 data on the 5,000 busiest domestic airport-pair origin and destination markets or markets for air travel between two airports. These 5,000 markets accounted for over 90 percent of the total U.S. domestic air traffic in 1997.²³

The potential for the Northwest-Continental alliance to harm consumers depends on the features of the agreement and on whether it creates an environment that discourages competition between the two partners. Several factors could influence whether the partners cooperate rather than compete as independent entities. These factors include how much ownership one partner has in the other, how revenue from jointly operated flights is shared, whether the airlines' pricing practices change, and whether the airlines coordinate their schedules, especially if such coordination reduces the total number of flights or available seats in a market. Some of this information is contained in proprietary documents provided by Northwest and Continental to DOJ and DOT. Northwest and Continental declined to let us review these confidential documents, but we discussed various elements of the agreement with airline officials and industry experts.²⁴

All but one of the industry experts whom we interviewed agreed that an investment such as Northwest's in Continental would be likely to affect the behavior of the airlines over time, encouraging them to cooperate in order to maximize the value of the investment to their stockholders. Some of these industry experts believed that the alliance partners would not vigorously compete with each other, particularly over the long term. If they are correct, then the alliance could have harmful effects on consumers. In contrast, officials from Northwest and Continental insist that while their alliance arrangement is in many ways like a merger, the airlines will continue to operate independently. They said that although

²²We have also reported in the past that airfares in dominated markets tend to be higher than in other markets. See, for example, *Airline Competition: Effects of Airline Concentration and Barriers to Entry on Airfares* (GAO/RCED-91-101, Apr. 26, 1991).

²³The following example indicates how large these markets are: The smallest of the top 5,000 were between Jacksonville, Florida, and Newport News/Williamsburg, Virginia, and between Burlington, Vermont, and Cleveland, Ohio. In each of these markets, 7,964 passengers (an average of 22 each day) flew in 1997.

²⁴These industry experts included several financial analysts in New York investment firms and brokerage services, nationally recognized academicians, and other individuals with expertise in specific aspects of the industry, such as computer reservation systems.

Northwest will own the largest percentage of the voting stock in Continental, it will not own a majority of the voting stock and its voting trust agreement with Continental is such that it effectively has no ability to affect or influence the control or management of Continental for the next 10 years.²⁵

Industry experts expressed concern that this alliance could create an environment in which the airlines would compete less vigorously even if there were no change in equity between the alliance partners. One industry expert we spoke with said that in the airline industry, where there are only a few firms and where rivals' fare and schedule information is widely available, tacit coordination is relatively easy. Some industry experts pointed out, for example, that the two airlines could cooperate on some aspects of their business. As a result, according to this expert, Northwest and Continental might not compete aggressively on fares or schedules, fares could rise, and service levels could eventually decline. In contrast, Continental and Northwest officials said that they will continue to set fares and schedules independently and that competition will not decline because of the alliance. For example, on nonstop routes that both airlines serve, Continental will receive a booking fee that is similar to a travel agent's fee (an amount equal to Continental's costs) for ticketing a passenger on a Northwest flight, but none of the revenue, and vice versa. As a result, airline officials say, each airline will have an incentive to book passengers on its own airplanes. When a passenger's travel involves segments served by both airlines, revenues will be split between the two airlines on the basis of a prorated schedule that is standard in the industry. When announcing the stock acquisition, Northwest and Continental also said that they would not implement code-sharing on the seven hub-to-hub

²⁵According to Continental officials, the governance agreement between the two airlines deprives Northwest of substantially all voting power over the Continental securities it acquired, severely limits Northwest's ability to acquire additional voting securities, and prohibits Northwest from seeking to affect or influence Continental's business. As a result, they say, Northwest effectively has no ability to affect or influence the control or management of Continental. In its antitrust complaint against Northwest and Continental, DOJ disagreed with this conclusion. DOJ said that ". . . the governance agreement does not prevent the harm likely to result from Northwest's acquisition of voting control of Continental. No private agreement can alter the fact that Northwest still owns Continental, and Continental will not compete vigorously with its owner during the term of the governance agreement." After DOJ filed its complaint, Northwest and Continental announced a revision to the acquisition agreement that provides Northwest with less than half—46 percent—of the voting control of Continental. Certain partners of the original seller of the majority control of Continental, Air Partners, L. P., retained ownership of 853,644 shares of Continental's stock, or about 5 percent, and granted Northwest a limited proxy for the voting of these shares, thereby limiting the ability of Northwest to exercise strict voting control over Continental. On Dec. 18, 1998, DOJ filed an amended complaint reflecting the consummation of Northwest's stock purchase agreement and changes made to various agreements by the parties involved in the transaction. The amended complaint alleges that Northwest would still own more than 50 percent of the fully diluted voting power over Continental. See pp. 37 to 39 for additional information.

routes that they both serve. For example, for flights from New York City to Detroit, the two would continue to compete directly.

It is difficult to determine precisely how the alliance will affect competition, but the industry experts' concerns and the airlines' past records establish cause for concern. As discussed, there is widespread agreement among these experts that competition will likely decline over time as firms recognize their interdependence and maintain prices above the competitive level. This understanding is consistent with widely held economic principles showing that competition lessens when there are fewer competitors. It is also consistent with a recent DOT paper containing evidence that, when given the chance, airlines do not compete vigorously.²⁶

According to DOT, prices on routes of less than 750 miles were generally not competitive unless a low-fare carrier, such as Southwest, served the route and kept prices closer to a competitive level. On routes not served by a low-cost carrier, major airlines have recognized their interdependence and kept prices above the competitive level. If the ties between major airlines are strengthened, the airlines will have even more opportunities to recognize their interdependence. If this occurs, competition may suffer and prices may rise.

Northwest-Continental Alliance May Decrease Competition in Certain Markets and Could Potentially Harm Consumers

If the partners in the Northwest-Continental alliance do not vigorously compete over time, the harm to consumers will depend on the number of markets where the partners provide overlapping service (including the number of passengers served), the alliance's share²⁷ of these markets, and the effects of the alliance on barriers to entry.

The Alliance Could Reduce Competition in Shared Markets. We found that a Northwest-Continental alliance could reduce or eliminate competition in 63 of the top 5,000 markets. Nearly 2 million passengers traveled in these markets in 1997. The alliance could effectively eliminate competition in five markets, with about 36 percent of these passengers (723,186 in 1997), by reducing the number of competing airlines from two to one. The largest of these markets is Detroit to Newark, where the alliance partners served 97 percent of the market in 1997—428,574 passengers. In 24 markets, the alliance could reduce the number of competitors from three to two, and it could become the largest carrier in nearly two-thirds of these markets. The

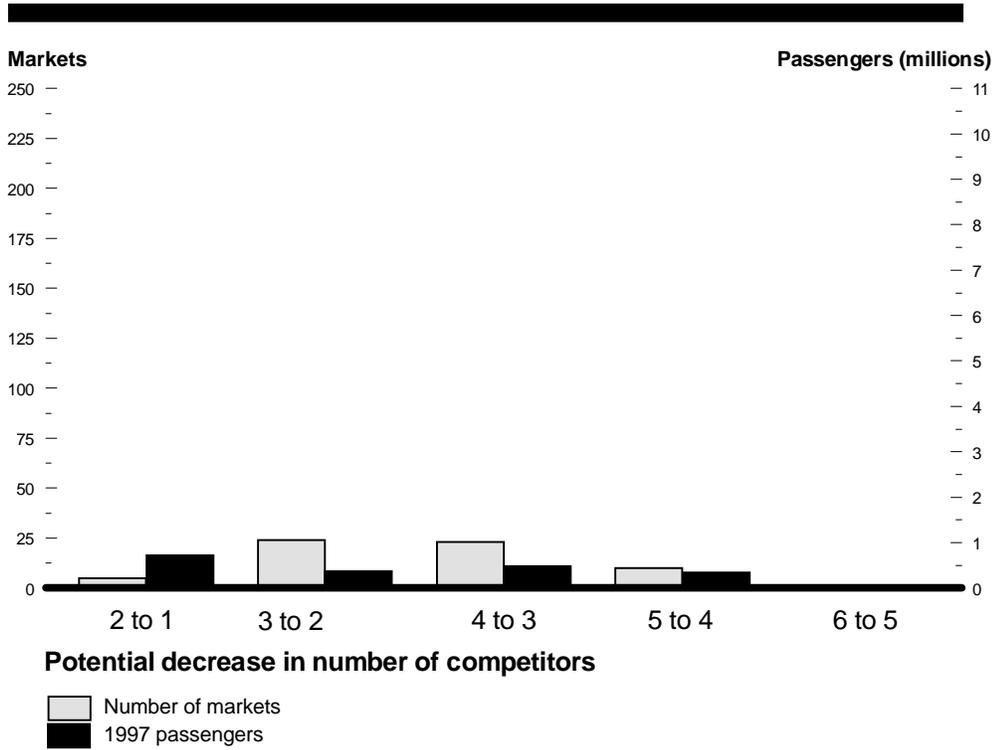
²⁶See Competition in the U.S. Domestic Airline Industry: The Need for a Policy to Prevent Unfair Practices, DOT (July 1998).

²⁷Market share may be determined by any number of measures, such as the total number of passengers that an airline carries, the number of available seats flown by the airline, or the total number of departures in a given market. For this report, we measured market share by the number of passengers carried in a given airport-pair market.

markets where the alliance could decrease the number of competitors to three or fewer served approximately 1.6 million passengers in 1997. These are the markets that could suffer the greatest potential harm from the alliance.²⁸ Figure 5 illustrates the number of markets and passengers with the potential to be harmed under a Northwest-Continental alliance if the partners do not price their fares independently.

²⁸For all markets that experienced decreases in the number of active competitors, we calculated the Herfindahl-Hirschmann Index (HHI), a measure of concentration used by DOJ, in which higher scores reflect greater increases in market dominance. The HHI is calculated by summing the squares of the individual market shares of all participants. An HHI below 1000 is considered unconcentrated, between 1000 and 1800 moderately concentrated, and above 1800 highly concentrated. The average change in the HHI for the Northwest-Continental alliance was 994, with a range of 219 to 4,588. This suggests that the Northwest-Continental alliance would create much greater concentration in markets where the alliance might reduce the number of active competitors from three to two and from two to one than in markets where the alliance might reduce the number of active competitors from five to four.

Figure 5: Number of Markets and Passengers Subject to Potentially Decreased Competition Under the Northwest-Continental Alliance



Note: So that readers can more easily compare the number of markets and passengers potentially affected by the Northwest-Continental alliance with the number of those potentially affected by the two other alliances and by all three alliances, should they eventually move to code-sharing (see figs. III.1, IV.1, and V.1), we are using the same scales for all figures.

Source: GAO's analysis of data provided by Data Base Products, Inc., on the top 5,000 origin and destination markets in 1997.

Northwest and Continental have attempted to address DOJ's concerns about competition. According to Northwest and Continental officials, the airlines have agreed not to implement code-sharing in the local hub-to-hub markets, such as Detroit to Newark, where DOJ identified potentially

anticompetitive effects.²⁹ While refraining from code-sharing is a positive step on the part of the airlines to address these concerns, some industry experts with whom we spoke expressed doubt about how much it would reduce the potential harm to consumers. They explained that because the alliance partners would continue to exchange information on other aspects of their operations, such as scheduling, they may not be able to act as independent competing airlines.

To a certain extent, the harmful effects of reducing competition in some markets, assuming the alliance partners will not compete, could be mitigated by increasing competition in other markets. In 286 of the top 5,000 markets, each of the two carriers has a limited market share that, if combined, would create a larger, active competitor.³⁰ These markets served a total of 15.1 million passengers in 1997.³¹ However, on average, the effect of creating this potentially stronger competitor is relatively small because some of these markets continue to be dominated by other airlines.³² For example, in 36 of the 286 markets where the Northwest-Continental alliance's market share will equal or exceed 10 percent, another single competitor will remain dominant. These 36 markets served 1.2 million passengers in 1997. Thus, although the alliance

²⁹The DOJ complaint also cited the following six city-pair market as potentially troublesome: Detroit-Cleveland, Detroit-Houston, Cleveland-Minneapolis, Minneapolis-New York City, Houston-Minneapolis, and Houston-Memphis. By forgoing code-sharing in these markets, the airlines have adopted an approach similar to that often used by international airline alliances seeking antitrust immunity. For example, in reviewing the alliance between United and Lufthansa German Airlines, DOJ expressed concern that the two airlines could dominate particular city- or airport-pair markets. DOT ordered that antitrust immunity would not extend to airline activities relating to pricing, inventory or yield management coordination, or pooling of revenues, with respect to certain passengers flying nonstop between Chicago and Frankfurt, and Washington and Frankfurt.

³⁰Our prior testimony, *Aviation Competition: Proposed Domestic Airline Alliances Raise Serious Issues* (GAO/T-RCED-98-215, June 4, 1998), which presented our preliminary work, used 5 percent as a minimum market share to determine the presence of a competitor, a standard consistent with the work of some other researchers. DOT uses 10 percent to define a competitor, and subsequent discussions with DOT officials, some airline officials, and industry experts convinced us that 10 percent better reflected a competitor in the market. Accordingly, for the purposes of this report, we are defining any airline or alliance as an "active competitor" if it carries 10 percent or more of any given market. Conversely, if an airline or an alliance has less than 10 percent of any given market, we are defining its market share as "limited." The effect of raising the market threshold should help eliminate some potential problems in the quality of the data reported to DOT and reduce the counts of markets (and thus of passengers) affected positively or negatively by the formation of the alliances.

³¹Northwest-Continental officials used a higher threshold in calculating when the alliance would increase service. They stated that by creating a market presence of at least 15 percent, their alliance would create broader service offerings in 32 other major cities, affecting 33.4 million passengers. For example, cities like Orlando and Indianapolis would have two significant carriers instead of one; and Baltimore, Tampa, and Columbus would have three significant carriers instead of two. We could not verify the number of passengers affected.

³²The average increase in the HHI attributable to the creation of the Northwest-Continental alliance for these 286 markets is 71, with a range of 2 to 191. This indicates that the addition of the alliance as an active competitor would make relatively little difference in the competitive structure of these markets.

will create a greater presence in many markets, offering more flights and choices to travelers, the overall improvement in competition will be limited by other dominant competitors.

The Alliance Could Create Some Additional Dominant Markets. Market share is particularly important in determining the extent to which an alliance may be harmful to consumers. Industry experts generally agree that if an airline can capture significant market share, its revenue share will increase faster than its market share; in other words, an airline can earn a fare premium because, among other reasons, it offers the high level of flight frequencies preferred especially by business travelers. Airlines that achieve a dominant market position can drive out airlines with smaller market shares by making it unprofitable for them to compete. Additionally, a number of studies have shown that markets with fewer competitors, especially those dominated by a single carrier, have higher fares.³³ We reported in 1993, for example, that fares at concentrated airports were about 22 percent higher than fares at less concentrated airports.³⁴

Table 2 shows how many of the top 5,000 busiest airport-pair markets in 1997 were already dominated by either Northwest or Continental, as well as how many will be dominated through the alliance's creation. Northwest dominated 325 markets and Continental dominated 142 markets. By combining the partners' market shares, the alliance will gain a majority share in 25 additional markets (an increase of 5 percent). One market, Atlanta-Newark, was relatively large, having served 1.2 million passengers in 1997 (3,205 passengers per day, on average). However, none of the other markets were relatively large; they served an average of 135 passengers per day in 1997. Markets that will be dominated by the new alliance include Atlanta-Newark and Cleveland-Phoenix.

³³See, for example, Steven A. Morrison, "New Entrants, Dominated Hubs, and Predatory Behavior," Statement before the Subcommittee on Antitrust, Business Rights, and Competition, Committee on the Judiciary, United States Senate (Apr. 1, 1998).

³⁴Airline Competition: Higher Fares and Less Competition Continue at Concentrated Airports (GAO/RCED-93-171, July 15, 1993).

Table 2: Effect of the Northwest-Continental Code-Sharing Alliance on Market Dominance

	Number of markets with more than 50-percent market share	Number of passengers, 1997
Northwest	325	20,790,192
Continental	142	17,548,616
Alliance (new)	25	2,355,163
Total	492	40,693,971

Notes: Market share is defined as the percentage of domestic traffic in 1997. Dominant markets are defined as those with more than 50-percent market share.

Source: GAO's analysis of data provided by Data Base Products, Inc., on the top 5,000 origin and destination markets in 1997.

The Alliance Could Increase Operating and Marketing Barriers to Entry. To the extent that an alliance creates barriers to market entry, it can limit competition. If entry is easy, a single airline cannot charge monopoly prices over the long term because other airlines will enter and provide competition. However, if entry is difficult, then the airline may offer fares above competitive levels. As we have reported in the past, operating barriers such as slot controls and gate constraints (long-term leases for one airline's exclusive use of a large number of gates) have contributed to higher fares on routes to and from some airports.³⁵ If the formation of an alliance further concentrated control in one entity at any of these airports, then fares might rise and the prospects of new competition at these airports might be further diminished. Similarly, marketing barriers such as frequent flyer programs and travel agent commission overrides³⁶ can also inhibit competition, particularly in markets already dominated by a given airline.³⁷

The Northwest-Continental alliance will not appreciably change the level of concentration at slot-controlled and gate-constrained airports. Northwest's hubs at Minneapolis and Detroit and Continental's hub at Newark are gate-constrained airports because Northwest and Continental control all or a majority of the leases there. However, these three airports are already heavily concentrated, and the combination of these two carriers will not change that. For example, in 1997, Northwest held

³⁵See Airline Deregulation: Barriers to Entry Continue to Limit Competition in Several Key Domestic Markets (GAO/RCED-97-4, Oct. 18, 1996).

³⁶A travel agent commission override is a special bonus paid by an airline to travel agents or agencies as a reward for booking a targeted proportion of passengers on the airline.

³⁷See Aviation Competition: International Aviation Alliances and the Influence of Airline Marketing Practices (GAO/T-RCED-98-131, Mar. 19, 1998).

77.8 percent of the market (defined as the total number of enplanements for the year) at Detroit, and Continental held only 1.6 percent.

We did not evaluate the potential effect on other carriers or consumers of combining the two airlines' frequent flyer benefits. Earlier this year, however, we reported on how certain marketing practices, such as frequent flyer programs, can act as barriers to entry.³⁸ The combination of frequent flyer programs under an alliance could present a more formidable barrier to entry for new-entrant airlines and point-to-point carriers lacking extensive networks. Northwest has approximately 20 million members in its WorldPerks frequent flyer program, and Continental has approximately 16 million in its OnePass program.

Consumer advocates we interviewed expressed some concern that the airlines might increase their frequent flyer award requirements in the future, thereby discounting the value of the frequent flyer benefits. They also noted that because members of both airlines' frequent flyer programs may redeem miles on both carriers, finding available mileage awards could become far more difficult.

In addition, a nonaligned airline, consumer groups, and an industry expert stressed the adverse effect on competition that alliances like the one between Northwest and Continental could have through computer reservation systems. The alliance could gain a competitive advantage through multiple listings of the same code-sharing flight on the reservation screen, increasing the likelihood that the alliance's flights would be the first offered to the consumer.

Alliances Between American-US Airways and United-Delta May Increase Operating and Marketing Entry Barriers for Certain Airlines

As of October 1998, the arrangements between American and US Airways and between Delta and United were generally limited to ties between their respective frequent flyer programs, including reciprocal access to airport lounges. Implementation of the frequent flyer agreement between American and US Airways began in August 1998, and Delta and United began participating in each other's frequent flyer programs on September 1, 1998.³⁹ Reciprocal access to both airlines' airport clubs will follow. Both alliances will provide benefits to members of each airline's

³⁸See footnote 38.

³⁹According to data from InsideFlyer magazine, as of Aug. 1998, American had 32.0 million members in its Aadvantage program (the largest membership of any frequent flyer program in the world), US Airways had 4.0 million Dividend Miles members, United had 23.0 million MileagePlus members, and Delta had 17.5 million SkyMiles members.

frequent flyer program by offering new destinations to which members can fly. At the same time, however, by solidifying their customer base through such marketing efforts, the alliances may raise further barriers to entry for new airlines in certain markets.

Passengers who belong to both American's and US Airways' frequent flyer programs will be able to combine miles from both airlines to redeem an award for travel on either airline. Because the partners offer greater market presence in different parts of the country (as well as complementary international destinations), according to airline officials, American's frequent flyers will have access to 105 new award destinations and US Airways' frequent flyers will be eligible for award travel to 120 new destinations. In addition, American's frequent flyers will be able to use their miles from either airline to claim awards on certain US Airways Shuttle flights between Washington, D.C.; New York; and Boston.⁴⁰ The two airlines have also agreed to allow reciprocal access to all domestic and international club facilities. American's club members will gain access to US Clubs at 12 additional airports, and US Club members will gain access to 35 American clubs. The agreement between Delta and United is somewhat more limited. Passengers may choose to participate in one or both frequent flyer programs, but miles earned on any given alliance flight may be awarded to only one program. Passengers will not be able to combine miles earned from both programs to obtain an award from one of the alliance partners. Because of the number of locations served uniquely by United and Delta, according to airline officials, United's frequent flyers will have access to 75 new domestic award destinations and Delta's frequent flyers will be eligible for award travel to 108 new domestic destinations (assuming the alliances' frequent flyer program award destinations extend to the airlines' commuter partners).

As noted in discussing the Northwest-Continental alliance, we did not evaluate the effect on other carriers or consumers of combining frequent flyer benefits through an alliance, but we have reported that the existence of frequent flyer programs can act as a barrier to entry for new-entrant airlines and point-to-point carriers lacking extensive networks.

⁴⁰Effective Feb. 1, 1999, American will raise the number of miles required for first class and business class tickets in most international markets. In addition, an upgrade from a discounted domestic ticket to a first class ticket will require 30,000 miles instead of 20,000 miles. Coach class awards will remain the same. American also eased some mileage requirements, such as the number of miles needed to claim an upgrade for passengers traveling on a full-fare ticket.

Federal Reviews of Alliances Are Ongoing

DOJ and DOT have both been examining the alliances. Although cooperating, they are conducting separate reviews because they have different statutory authorities, responsibilities, and remedies. DOJ filed a civil antitrust action in October to block the equity investment agreement between Northwest and Continental and amended its complaint against the revised agreement in December. DOT has the authority to prevent unfair, deceptive, or anticompetitive practices, and its statute lists the avoidance of unreasonable concentration in the airline industry as a public interest factor to be considered in its decision-making. Under authority provided by a new law, DOT has imposed waiting periods for certain aspects of the Northwest-Continental alliance.⁴¹ Although it does not have the authority to preapprove an alliance, DOT can seek to stop specific anticompetitive practices.

DOJ Has Filed Legal Action to Block Northwest From Obtaining Voting Control Over Continental

On October 23, 1998, DOJ filed a civil antitrust complaint to prevent Northwest from acquiring or holding a majority of Continental's voting stock. DOJ said in its complaint that Northwest's gaining voting control would lessen competition in interstate trade and commerce and unreasonably restrain trade and that the transaction would also likely create "interlocking directors" on the boards of directors of both airlines, with certain individuals sitting on both boards. DOJ believed that the alliance would substantially diminish both airlines' incentives to compete against each other and would cause consumers to pay higher prices and receive lower-quality service in some markets.

DOJ has specific authority to review mergers or stock acquisitions before they take place under the Hart-Scott-Rodino Act to see whether they violate antitrust laws, and it has general authority to review alliances under the Sherman Antitrust Act and the Clayton Act. Under the Hart-Scott-Rodino Act, an acquisition of voting securities above a set monetary amount must be reported to DOJ for prior review. DOJ has the authority to institute civil or criminal proceedings under the Sherman Act if a merger or acquisition may restrain competition or is an attempt to monopolize a particular market.⁴² In addition, DOJ may bring a civil action under the Clayton Act if a merger or acquisition may substantially lessen competition in a relevant market or tend to create a monopoly.⁴³ If DOJ

⁴¹P. L. 105-277, division C, title I, sec. 110(f) (1998).

⁴²15 U.S.C. §§ 1-7.

⁴³15 U.S.C. §§ 12-27.

believes any agreement is anticompetitive in whole or in part, it may seek to block the agreement in federal court.

DOJ has been reviewing the Northwest-Continental alliance since it was first announced in January 1998, under the Hart-Scott-Rodino process. Under the Hart-Scott-Rodino Act, an acquisition of voting securities above a set monetary amount must be reported to DOJ⁴⁴ for review prior to the merger. On October 23, 1998, DOJ filed a civil antitrust action to prevent Northwest from acquiring or holding a majority of the Continental's voting stock. DOJ alleged that the effects of the alliance might be to substantially lessen competition in interstate trade and commerce in violation of the Clayton Act and to unreasonably restrain trade in violation of the Sherman Act. According to the complaint filed by DOJ, Northwest's acquisition of an equity stake and controlling interest in Continental would reduce Continental's incentive to compete aggressively against Northwest. As a result, consumers would pay higher prices and receive lower-quality service in markets dominated by Northwest and Continental. In addition, according to the complaint, consumers would lose the benefits of new, competitive entry by Continental against Northwest in the future and of potential competition in other markets.

DOJ did not seek a restraining order to stop all aspects of the alliance from moving forward. While it filed a complaint against the alliance's investment or stock acquisition agreement, it did not address the code-sharing alliance and frequent flyer agreements. In December 1998, Northwest and Continental proceeded with their alliance under a modified arrangement. For example, they said that they would not introduce code-sharing on flights between each other's hubs, where both airlines currently compete, and announced that Northwest would acquire less than half of the voting control of Continental's stock. DOJ responded to the revised agreement between Northwest and Continental by filing an amended complaint on December 18, 1998. DOJ alleged that despite the amended agreement, Northwest could still own more than 50 percent of the fully diluted voting power over Continental.⁴⁵ As a result, DOJ alleged that consumers would likely still be harmed in the markets dominated by

⁴⁴DOJ and the Federal Trade Commission have concurrent jurisdiction over Hart-Scott-Rodino matters and the Clayton Act. DOJ has jurisdiction over airline alliances and the airline industry in general because of an exemption in the Federal Trade Commission Act.

⁴⁵According to DOJ's amended complaint, notwithstanding the Nov. amendment to the Investment Agreement between Northwest and Air Partners, L.P., Northwest separately entered into another agreement on Mar. 2, 1998, with Barlow Investors III, LLC, to purchase approximately 5 percent of the voting power over Continental to ensure that Northwest would own over 50 percent of the fully diluted voting power over Continental.

Northwest and Continental. DOJ has also indicated that it has competitive concerns about certain specific aspects of the alliance between the airlines and that its investigation of these aspects of the alliance continues. According to DOJ officials, Northwest and Continental have 60 days from the date of DOJ's filing to respond. During that period, however, the parties may also file legal motions on various subjects, such as the procedural schedule.

DOJ has also indicated that it is looking at proposals for the other two alliances, as well as the potential impact of the alliances on the entire airline industry. Without detailing its ongoing reviews, it stated that its analyses of the three alliances under the Sherman and Clayton acts' authorities will follow an approach similar to that found in the Merger Guidelines, which are applied to a traditional merger. Under these guidelines, DOJ uses a five-part analytical process. First, DOJ defines the markets in which the partners operate and determines whether they are actual or potential competitors. DOJ testified before the House Committee on the Judiciary on May 19, 1998, that the greatest threat to competition comes when two of very few airlines that compete in a market enter into a code-sharing agreement in that market. DOJ stated that it is concerned about the effect on competition any time two of very few airlines in a market act jointly. Second, DOJ examines aspects of the agreement that may affect competition—for example, whether the partners' capacity, scheduling, and pricing decisions will remain independent. Third, DOJ considers the extent to which new competitors are likely to enter the market in response to anticompetitive behavior by the alliance partners. Fourth, DOJ examines the operational efficiencies or other benefits that may be generated by the agreement. Finally, DOJ considers whether one of the partners is likely to exit a market because of financial considerations if the alliance does not occur. After completing these parts, DOJ attempts to balance all of the factors in deciding whether the alliance raises any antitrust concerns. DOJ officials told us that they are under no timetable for their antitrust review of the United-Delta and American-US Airways alliances.

If DOJ has concerns, it usually attempts, before bringing a suit, to negotiate a consent agreement that will restructure the transaction to remedy the competitive harm. DOJ pointed to its recommendations to DOT for the international code-sharing arrangements between American and British Airways and American and the TACA group as an indication of the types of solutions that could be used domestically. In its recommendations to DOT on these international alliances, DOJ outlined several possible solutions,

including slot and/or market-specific divestitures to allow greater opportunity for new entry and carve-outs to eliminate certain city-pairs from an alliance where two airlines serve overlapping markets.

DOT Can Delay Alliances but Has No Preapproval Authority Unless a Change in Ownership Occurs

DOT is authorized to impose waiting periods on proposed alliances involving major U.S. airlines but has no authority to preapprove domestic airline alliances, except to conduct a fitness review when a change in ownership occurs. However, once an alliance is in place, DOT has the authority to prohibit unfair methods of competition in the airline industry, which it can use in reviewing the alliances.

DOT derives its authority to review proposed alliances from several statutory sources. DOT can review a proposed alliance under its certification and fitness procedures. However, once an alliance is in place, DOT can challenge it under its authority to prohibit unfair methods of competition and unfair and deceptive practices.⁴⁶ In addition, DOT's authorizing statute specifies that DOT should consider such policy matters as preventing unfair, deceptive, and predatory practices and avoiding unreasonable industry concentration and excessive market domination in carrying out its duties.⁴⁷ Furthermore, under new legislation passed in October 1998, DOT has the authority to impose an initial 30-day waiting period on certain joint ventures between major air carriers, which it may extend another 150 days for such joint venture agreements involving code-sharing.⁴⁸ This authority of DOT's does not limit DOJ's authority to enforce the antitrust laws.

DOT officials said they have focused their efforts to date on the Northwest-Continental alliance and on whether it meets fitness requirements.⁴⁹ DOT's fitness procedures include looking at U.S. citizenship requirements for the airlines involved, as well as their financial statements and safety records. Only the Northwest-Continental alliance is subject to these requirements because it alone is proposing a change in ownership that requires that a new owner's fitness be determined.⁵⁰ As of

⁴⁶49 U.S.C. § 41712.

⁴⁷See 49 U.S.C. §§ 40101(a)(9), (10), and (12).

⁴⁸P.L. 105-277, § 110(f). The joint ventures subject to this waiting period include only those entered into by a major airline after Jan. 1, 1998, that involve code-sharing, certain leasing arrangements, frequent flyer programs, and certain other cooperative working arrangements.

⁴⁹49 U.S.C. § 41102.

⁵⁰14 C.F.R. § 204.5.

December 31, 1998, DOT's fitness determination was ongoing. DOT also imposed waiting periods on the implementation of the Northwest-Continental alliance's frequent flyer and code-sharing agreements but said on December 4, 1998, that the airlines could proceed with their reciprocal frequent flyer program, which had been modified somewhat at DOT's request.

Although DOT does not have the authority to preapprove an alliance, it could institute an administrative enforcement proceeding if it determined that some aspect of an alliance or the alliance itself amounted to an unfair method of competition.⁵¹ DOT did not object to previous domestic alliances—Continental-America West and Northwest-Alaska—because it did not find them to be anticompetitive. As for its review of the United-Delta and American-US Airways alliances, a DOT official said the Department has received some information from the airlines on their frequent flyer agreements and certain other matters. A DOT official said that the Department will request additional information if it decides the information received is not sufficient and if the airlines propose to extend their alliances to include code-sharing. DOT will coordinate with DOJ in reviewing these alliances.

Agency Comments

We provided copies of a draft of this report to DOT and DOJ for their review and comment. We met with DOT officials from the Office of the Secretary, including the Deputy Assistant Secretary for Aviation and International Affairs and the Special Counsel. These officials indicated that the report provides a useful and constructive discussion of issues presented by alliances among airlines. They indicated that because DOT is reviewing each of these alliances, it is not at liberty, at this time, to provide specific comments on the potential effects of the alliances discussed in the draft report. Nonetheless, they indicated that DOT's authority over these three alliances is not as broad as the draft report might have led some readers to believe. DOT noted that it could challenge an alliance after it is in place, citing the Department's authority to prohibit unfair methods of competition and unfair and deceptive practices. DOT provided a number of specific and technical comments that addressed this and other issues; we incorporated these comments as appropriate. We also held discussions with DOJ officials, including the Chief of the Transportation, Energy, and Agriculture Section, within DOJ's Antitrust Division. In general, DOJ found the report to be a useful and constructive discussion of the issues presented by the airline alliances, and it provided technical corrections,

⁵¹49 U.S.C. § 41712.

which we incorporated into the report as appropriate. DOJ asked that we more clearly distinguish our use of the term “alliance,” (which DOJ applies only to code-sharing agreements, frequent flyer agreements, and similar arrangements between separate airlines) from arrangements in which an equity share is involved. We did so by specifically noting when the equity investment agreement was at issue. We also provided each participating airline with a copy of the section of the report describing its alliance agreement or proposal. The airlines generally agreed with our characterization of their arrangements and offered technical corrections, which we incorporated into the report as appropriate. Some airlines suggested other methods we might use to determine markets and market shares. In discussing our scope and methodology (see app. II), we point out that there may be several ways to define markets in the airline industry, and we carefully describe what we did and why. We did not share our analysis of the beneficial or harmful effects of the alliances with the airlines.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days after the date of this letter. At that time, we will send copies to the Secretary of Transportation; the Attorney General; the Director, Office of Management and Budget; and other interested parties. We will send copies to others upon request.

If you have any questions, please call me at (202) 512-2834. Major contributors to this report are listed in appendix VI.



John H. Anderson, Jr.
Director, Transportation Issues

Contents

Letter		1
Appendix I Airlines' Market Shares of Domestic Passenger Traffic—1997		40
Appendix II Scope and Methodology		41
Appendix III Potential Beneficial and Harmful Effects on Consumers of the Alliance Initially Proposed by United Airlines and Delta Air Lines	United-Delta Alliance With Code-Sharing Would Have New Destinations and Frequencies If the Partners Did Not Compete, a United-Delta Code-Sharing Alliance Could Harm Consumers	46 46 49
Appendix IV Potential Beneficial and Harmful Effects on Consumers of a Code-Sharing Alliance Between American Airlines and US Airways	A Code-Sharing Alliance Between American and US Airways Would Include New Destinations and Frequencies If the Partners Did Not Compete, an American-US Airways Code-Sharing Alliance Could Harm Consumers	54 54 55

Appendix V		59
Implementation of All Three Alliances as Code-Sharing Arrangements Could Substantially Affect Competition	<p>Consumers Could Realize Some Benefits If All Three Alliances Were to Proceed as Code-Sharing Agreements 60</p> <p>If Partners Did Not Compete, Code-Sharing Alliances Could Harm Consumers 60</p>	60
Major Contributors to This Report		65
Related GAO Products		67
Tables	<p>Table 1: GAO’s Analysis of Airport Pairs That Would Receive New On-Line Service Through Single or Double Connections Under a Northwest-Continental Alliance 18</p> <p>Table 2: Effect of the Northwest-Continental Code-Sharing Alliance on Market Dominance 27</p> <p>Table III.1: GAO’s Analysis of the Benefits of a United-Delta Code-Sharing Alliance: Airport Pairs That Would Receive New On-Line Service Through Single or Double Connections 48</p> <p>Table III.2: Potential Effect of a United-Delta Code-Sharing Alliance on Market Dominance 53</p> <p>Table IV.1: GAO’s Analysis of Benefits Under an American-US Airways Code-Sharing Alliance: Airport Pairs That Would Receive New On-Line Service Through Single or Double Connections 55</p> <p>Table IV.2: Potential Effect of an American-US Airways Code-Sharing Alliance on Market Dominance 58</p> <p>Table V.1: Alliance Partners’ Combined Market Share at Slot-Controlled and Gate-Constrained Airports 63</p>	63
Figures	<p>Figure 1: Illustration of a Hypothetical End-to-End International Alliance 5</p> <p>Figure 2: Percentage of Each State’s Departing Passengers That the Northwest-Continental Alliance Would Have Carried 10</p>	10

Figure 3: Percentage of Each State's Departing Passengers That the Originally Proposed United-Delta Alliance Would Have Carried	12
Figure 4: Percentage of Each State's Departing Passengers That a Code-Sharing Alliance Between American and US Airways Would Have Carried	14
Figure 5: Number of Markets and Passengers Subject to Potentially Decreased Competition Under the Northwest-Continental Alliance	24
Figure III.1: Number of Markets and Passengers Subject to Potentially Decreased Competition Under a United-Delta Code-Sharing Alliance	51
Figure IV.1: Number of Markets and Passengers Subject to Potentially Decreased Competition Under an American-US Airways Code-Sharing Alliance	56
Figure V.1: Number of Markets and Passengers Subject to Potentially Decreased Competition Under Three Code-Sharing Alliances	61

Abbreviations

DOJ	Department of Justice
DOT	Department of Transportation
GAO	General Accounting Office
HHI	Herfindahl-Hirschmann Index

Airlines' Market Shares of Domestic Passenger Traffic—1997

Airline or alliance	1997 domestic traffic (total number of passengers enplaned, in millions) ^a	1997 market share (percentage of total passengers) ^c
Northwest	47.1	8.5
Continental	34.2	6.2
Northwest-Continental	81.3	14.7
Delta	97.3	17.6
United	72.9	13.2
Delta-United	170.2	30.8
American	66.1	12.0
US Airways	57.4	10.4
American-US Airways	123.5	22.3
Alliance subtotal	375.0	67.8
America West	17.9	3.2
Alaska	11.5	2.1
Southwest	56.1	10.1
Trans World	22.2	4.0
Other major airlines subtotal	107.7	19.5
Other large airlines^b	70.2	12.7
Total^c	552.8	100.0

^aPassenger enplanements² represent the total number of passengers boarding an aircraft. Thus, for example, a passenger that must make a single connection between his or her origin and destination counts as two enplaned passengers because he or she boarded two separate flights. Other measures, such as the number of domestic origin and destination passengers or revenue passenger miles flown during a year, are sometimes used to illustrate the relative sizes of airlines. We believe that using these measures would produce few differences from the results shown in this table.

^bThis category includes such airlines as Reno, Midwest Express, and AirTran, along with the larger "regional" commuter airlines such as Atlantic Southeast, Continental Express, Horizon Air, Mesa, and Simmons. We are excluding other smaller commuter airlines because they tend not to compete for the same passengers as the larger airlines and carried only 1.5 percent of the total number of passengers that flew within the United States in 1997.

^cPercentages may not sum to subtotals because of rounding.

Source: GAO's analysis of DOT's data.

Scope and Methodology

At the request of the Chairman of the Senate Committee on Commerce, Science, and Transportation and the Chairman of that committee's Subcommittee on Aviation, we addressed three issues relating to the alliances among six of the largest U.S. airlines. Specifically, our objectives were to (1) determine the status of each of the alliances; (2) examine, for each alliance individually, the potential beneficial and harmful effects on consumers; and (3) examine the authority of the departments of Justice (DOJ) and Transportation (DOT) to review these alliances and the status of these reviews.

To determine the status of each of the alliances, we interviewed officials from each of the participating airlines, along with officials from DOJ and DOT. Because each of the alliances changed somewhat during the assignment, we maintained contact with officials from the airlines involved. We reviewed publicly available documentation that described the structure of each alliance and asked each airline about the involvement of its regional "feeder" commuter partners, international code-sharing partners, and other domestic code-sharing airlines (in the case of Continental and Northwest).⁵² To ensure that we understood the structure of each alliance, we also sought explanations from the partners on how they would share revenue in a variety of situations (for example, when one airline would sell a ticket to a passenger for a trip that was to involve both the main alliance airline and one of its regional partners.)

To determine the extent of the service benefits associated with the alliances, we examined the airlines' statements on their routing and connection benefits. To evaluate these statements, we analyzed airline schedule information for May 1998. To obtain these data for this report, we contracted with BACK Associates, Inc., an aviation consulting firm. BACK Associates, Inc., used information on flight schedules submitted by all U.S. airlines to the Official Airline Guide Worldwide and prepared computer programs to produce tables to our specifications. We based these specifications on information submitted by the airlines on the scope of their alliances. We also imposed some limiting assumptions that our discussions with industry experts led us to believe were reasonable. We adopted these to prevent our consulting firm's computer programming

⁵²Some of the alliance airlines—notably Continental and Northwest—said that they intended to extend code-sharing to their international partners. United and Delta officials said that if their alliance had proceeded, they would have liked to extend it to their international partners as well, but would wait for the resolution of a number of issues related to their existing alliances within Europe. (The European Union is reviewing all international code-sharing agreements involving European and U.S. airlines and proposing various changes in these business arrangements.) Because of differences in the extent to which the alliances have announced how their international partners would be integrated, we limited our analysis to the effects on U.S. domestic travel only.

from identifying what would seem to be obviously unreasonable flight patterns (e.g., flights between New York and Chicago that would connect through Los Angeles). These included (1) requiring potential connections between flights to fall between 30 and 150 minutes of one flight's scheduled arrival at the connecting airport and the next flight's scheduled departure⁵³ and (2) limiting the distance that possible flight segments might cover ("circuitry") to 125 percent of the distance between a flight's origin and destination, unless the flight connected through one of the airline's hubs, in which case we allowed up to 150 percent of the distance. Furthermore, with possible new double-connection markets, we limited the number of potential connection points by requiring connections to be made through the airlines' hubs. Because we were principally interested in the impact of the alliances on the U.S. domestic market, we excluded international destinations (including U.S. territories). We did not review BACK Associates, Inc.'s programming but verified the logic of that programming and discussed with company officials the approach that they used. This analysis provided information on the extent to which the alliances may produce actual new "on-line" connections or service opportunities for passengers. Finally, we examined whether competitors provided equivalent, superior, or inferior service to these destinations.⁵⁴ To estimate the number of passengers who might benefit from the new on-line service, we then matched the new on-line origins and destinations against the 1997 passenger traffic in these markets. We did not independently assess the airlines' basis for stating that their improved service options would generate additional traffic. We also did not attempt to quantify the benefits of the reciprocal relationships among frequent flyer programs and clubs that would be established under the alliances.

To examine the potential harm from the alliances, we determined the extent to which each airline's routes overlap with those of its alliance partner by analyzing 1997 data on the 5,000 busiest domestic airport-pair origin and destination markets or markets for air travel between two airports. These 5,000 markets accounted for over 90 percent of the total 396 million U.S. domestic passengers in 1997. To obtain these data for this

⁵³On the basis of information provided by the alliance airlines, we assumed that the alliance partners would make minimal changes to their schedules. Airline officials told us that larger changes would disrupt their entire systems.

⁵⁴Equal service means that competing airlines currently offer service that matches the alliance's potential single- or double-connection service. Superior service includes current direct and nonstop service by competitors between airports that the alliance could serve at best on a single-connection basis; and direct, nonstop, or single-connection service by competitors between airports that the alliance could serve at best on a double-connection basis. Inferior service means that competing airlines currently offer no service or double-connection service between airports where the alliance could offer single-connection service, or no service where the alliance would provide double-connection service.

report, we contracted with Data Base Products, Inc., which used information submitted by all U.S. airlines to DOT for 1997 and produced various tables to our specifications. Data Base Products, Inc., used three different data sources from DOT: the Origin and Destination Survey (O&D) based on a 10-percent sample of tickets containing itinerary and pricing information; T-100 on-flight data;⁵⁵ and 298C T-1 data, which supplement the T-100 data with data on commuter and small certified air carriers. Data Base Products, Inc., made certain adjustments to these data, such as correcting recognized deficiencies in the air carriers' O&D data submissions, which have not met DOT's standard of 95-percent accuracy. For example, Data Base Products, Inc., used the T-100 and the 298C T-1 data to obtain more accurate passenger counts. We did not review the company's programming but did discuss with company officials the adjustments that they made.

We examined whether the formation of alliances might reduce competition within a given airport-pair market under various assumptions about how large a market share an alliance would need to be considered an "active competitor." In our testimony on June 4, 1998, which reported our preliminary results on the effects of the proposed alliances, we defined a competitor as one that carried at least 5 percent of the enplaned passengers in a particular market.⁵⁶ DOT uses 10 percent as a minimum market share. Our conversations with DOT officials, some airline officials, and industry experts convinced us that 10 percent better represented a competitor in the market and also eliminated some potential problems in the quality of the data that are reported to DOT. For all these reasons, we decided to use DOT's minimum. To provide additional insight into markets where an alliance may exert additional or disproportionate market influence, we then further refined our analysis to focus on those markets where an alliance would have a dominant share—more than 50 percent. Various studies support the finding that airlines holding dominant shares of a market reap disproportionate amounts of the revenue available in that market, because they are able to provide far more frequent service, which is important for time-sensitive, high-yield business travelers. To a limited extent, the harmful effects of having fewer competitors in some markets,

⁵⁵14 C.F.R. 241 prescribes the collection of scheduled and nonscheduled service traffic data from the domestic and international operations of U.S. air carriers. The schedules submitted by the air carriers to DOT under this requirement collect nonstop segment data and on-flight market information by equipment type and by service class. This report is known as the "T-100" report.

⁵⁶See *Aviation Competition: Proposed Domestic Airline Alliances Raise Serious Issues*, (GAO/T-RCED-98-215, June 4, 1998). Our use of 5 percent as a minimum market share to determine the presence of a competitor is supported by some researchers, notably Belobaba and Van Acker in "Airline Market Concentration: An Analysis of U.S. Origin—Destination Markets," *Journal of Air Transport Management* (1994).

assuming the alliance partners would not compete, could be mitigated by an increase in competition in other markets.

We defined a market as one involving airport pairs, rather than city pairs, because certain groups of passengers—particularly business travelers—who may need to make connections to reach their final destination do not regard various airports as substitutes. For example, many, if not most, business travelers going to and from Chicago, would not regard Midway Airport as an adequate substitute for O'Hare. This market definition is in line with the analysis of international airline alliances that appeared in DOJ's comments on the proposed code-sharing alliance between American Airlines and British Airways.⁵⁷

In our analysis of markets that lost or gained a competitor with the formation of an alliance, we determined the significance of this loss or gain by looking at changes in market concentration. To do this, we used an index used by DOJ, the Herfindahl-Hirschmann Index (HHI), in which higher scores reflect greater increases in market dominance. The HHI is calculated by summing the squares of the individual market shares of all participants. We calculated changes in the HHI in the markets where a competitor was lost and where a competitor was added, as well as the changes in the range of HHIs for these markets. We recognize that the HHI may provide somewhat misleading results when applied to the airline industry but believe that it is nonetheless useful in suggesting the change in the amount of concentration over time.

To determine the cumulative effect that all three alliances might exert on the U.S. traveling public, we analyzed the routings and traffic simultaneously. This analysis accounted for various offsetting effects that the alliances might produce and explains why the total number of passengers potentially benefiting from or harmed by the three alliances is not simply the sum of those affected by the three individual alliances. For example, the analysis of a single alliance might suggest that if two partners did not continue to charge competitive prices, then a particular airport-pair market might lose a competitor, and that loss, according to 1997 origin and destination information, would affect some number of passengers. However, that same airport-pair market might conceivably benefit from another alliance, whose formation would create a new active

⁵⁷United and American disagreed with our definition of the relevant markets, arguing in favor of city pairs. We recognize that city pairs can also be used to analyze various air markets. At the same time, while some airports may serve as substitutes for other airports in the same community, they are often not perfect substitutes. Only an extensive analysis of the traffic of each airline at each of these airports would reveal the extent to which the airports could serve as substitutes.

competitor. Consequently, the net effect of both alliances might be to produce the same number of competitors in the market, and the total number of passengers affected would be the difference between the two. Because of technical and computing limitations, we were unable to analyze the cumulative benefits that implementing all three alliances' would have had on flight connections, flight frequencies, and the number of new on-line destinations.

We interviewed officials from DOT, DOJ, consumer groups, a flight attendants' union, and each of the six major airlines contemplating domestic alliances. For the remaining nonaligned major U.S. passenger airlines, we either interviewed officials or obtained their views through published speeches or news releases.

We also conducted interviews with recognized industry experts. These included academic experts recognized nationally for their expertise in airline competition work (including the effects of various cooperative ventures, such as frequent flyer programs); individuals with expertise in particular aspects of the industry, such as ticketing and computer reservation system issues; and several Wall Street airline financial analysts. We asked for their views on how the alliances might affect domestic airline competition, participating airlines, and consumers. We selected these individuals on the basis of their published work on the industry.

To determine the authority of DOT and DOJ to review the domestic alliances, we reviewed the statutory basis for each department's work, including DOJ's Merger Guidelines, and we interviewed officials at both DOT and DOJ. We also reviewed the complaint filed by DOJ against Northwest and Continental, as well as the public responses provided by these airlines.

We conducted our work from May 1998 through December 1998 in Washington, D.C., and Seattle, Washington, in accordance with generally accepted government auditing standards.

Potential Beneficial and Harmful Effects on Consumers of the Alliance Initially Proposed by United Airlines and Delta Air Lines

The current alliance between United and Delta involves reciprocity between their frequent flyer programs. We analyzed the potential beneficial and harmful effects of such a structure in the body of this report. However, the alliance between United and Delta could incorporate code-sharing in the future. As a result, in this appendix, we analyzed this alliance assuming a code-sharing relationship. Our assumption is based on discussions with various industry experts, who maintain that if the code-sharing alliance between Northwest and Continental is implemented, the other major airlines may move toward some sort of code-sharing alliance as a competitive response. If the United-Delta alliance does proceed with code-sharing, the potential for beneficial and harmful effects on consumers could be significant.

United-Delta Alliance With Code-Sharing Would Have New Destinations and Frequencies

When United and Delta originally proposed a code-sharing alliance, they said that it responded to their customers' wishes and would benefit consumers. The airlines explained that code-sharing would create new on-line service, providing consumers with more flight frequencies and improving connections. A comparison of the airlines' estimates of a code-sharing alliance's benefits and our analysis of these benefits follows.

Originally Proposed United-Delta Alliance Would Have Provided More On-Line Destinations for Travelers

According to United and Delta, a code-sharing alliance such as they originally proposed would create new service in many U.S. cities. The airlines reported that, under such an alliance, Delta would gain access to 19 domestic points that it does not now serve and United would gain access to 37 such points. In particular, 14 small and medium-sized cities, such as Bangor, Maine, and Santa Barbara, California, would gain new service. In total, the airlines said, if a code-sharing alliance were extended as originally planned to the airlines' commuter partners, Delta would extend its on-line network to 108 new domestic points and United to 75 new domestic points. Thus, multiplying the possible new destinations together, the airlines said that 8,100 domestic city pairs could gain new on-line service as a direct result of a code-sharing alliance. For example, a passenger in Lincoln, Nebraska, could fly on-line to Sarasota, Florida, for the first time on either United or Delta. The airlines said they expected that on-line fares would be lower than interline fares, which are generally the sum of the fares on each airline's segments.

Our analysis showed that a code-sharing alliance between United and Delta would serve fewer new airport pairs than the airlines estimated.⁵⁸

⁵⁸See app. II for additional information on our methodology.

**Appendix III
Potential Beneficial and Harmful Effects on
Consumers of the Alliance Initially Proposed
by United Airlines and Delta Air Lines**

Applying the same criteria that we used for our analysis of the Northwest-Continental alliance, we first found that such an alliance could create on-line single-connection service in 157 markets that served 2.6 million passengers in 1997. In 86 of these markets, a United-Delta code-sharing alliance would produce superior service to that already offered. (In 78 of these markets, the United-Delta service would be improved on-line single-connection service compared with existing double-connection service; competitors provided existing double-connection service in the other 8 markets.) However, in 71 markets, competing airlines' existing service would be superior or at least equal to that which the alliance would provide. We also found that a United-Delta code-sharing alliance could create 50 new double-connection markets. However, either one of the alliance partners or a competitor already provided on-line service to each of these markets. Although the United-Delta alliance would provide superior service to that offered by competitors in 9 markets, other competing airlines already provided superior or equal service in 41 of these markets. Table III.1 provides our detailed analysis of the new on-line benefits that consumers could expect from this code-sharing alliance.

**Appendix III
Potential Beneficial and Harmful Effects on
Consumers of the Alliance Initially Proposed
by United Airlines and Delta Air Lines**

Table III.1: GAO's Analysis of the Benefits of a United-Delta Code-Sharing Alliance: Airport Pairs That Would Receive New On-Line Service Through Single or Double Connections

Type of new on-line service	Total markets and average number of passengers per day who would receive new United-Delta service				
	Number of markets	Average number of passengers per day per market in 1997	Number of markets in which competing airlines provide superior service ^a	Number of markets in which competing airlines provide equal service ^b	Number of markets in which competing airlines provide inferior service ^c
Single-connection	157	46	20	51	86
Double-connection	50	6	33	8	9

^aSuperior service includes current direct and nonstop service by competitors between airports that a United-Delta code-sharing alliance could serve at best with single-connection service; and direct, nonstop, or single-connection service by competitors between airports that United-Delta could serve at best with double-connection service. Direct service differs from nonstop service in that a "direct" flight makes a scheduled stop between an origin and a destination, but passengers flying between the origin and destination are not required to change planes, while a nonstop flight between an origin and a destination makes no scheduled stops en route.

^bEqual service means that competing airlines currently offer service that matches a United-Delta code-sharing alliance's potential single- or double-connection service.

^cInferior service means that competing airlines currently offer (1) no service or double-connection service between airports where a United-Delta code-sharing alliance could offer single-connection service or (2) no service between airports where a United-Delta code-sharing alliance could provide double-connection service.

Source: GAO's analysis of information provided by BACK Associates and Data Base Products, Inc.

A United-Delta Code-Sharing Alliance Would Provide More Frequencies and Routings

According to airline officials, a code-sharing alliance would provide more flight frequencies and better connections to 81 U.S. cities. For example, United currently offers one daily nonstop round-trip flight between Atlanta and San Francisco, and Delta offers six flights in the same market. Under a code-sharing alliance, consumers could choose among seven daily nonstop flights as if they were all Delta or all United flights. United and Delta officials said that combining each of their nonstop flights would result in a total of 4,600 new daily flight frequencies, affording over 2.3 million passengers additional nonstop frequency options. Moreover, the airlines projected that these additional nonstop frequency options would attract new passengers to their alliance.⁵⁹ Our limited analysis of flight

⁵⁹The alliance projected 750,000 new passengers. Experts we consulted, however, said that the model used was more appropriate for determining the direction of a change rather than the absolute amount of a change. Moreover, the model assumed that no competing airline would make a competitive response, which might decrease the projected number of passengers.

frequencies suggests that the alliance could result in new, possibly improved, route options.

If the Partners Did Not Compete, a United-Delta Code-Sharing Alliance Could Harm Consumers

Because of the size of United's and Delta's respective route networks, a code-sharing alliance would produce more overlapping domestic routes than the other alliances and could harm many travelers if the airlines did not compete. United and Delta officials stated that their alliance would prove beneficial rather than harmful because each airline would remain independent and would continue to compete with the other.

According to United and Delta, neither airline would coordinate with the other on operations, such as setting fares and schedules, managing revenue, or acquiring aircraft. Without coordination in these areas, they said, the potential for adversely affecting competition is greatly diminished. According to both United and Delta, if they had a code-sharing agreement, only the airline that would actually provide transportation to a passenger on a given flight segment would receive revenue from that passenger.⁶⁰ Each airline would establish fares separately for the seats it sells. If a passenger were to fly one segment on United and another on Delta, the revenue would be prorated according to a standard agreement. The airlines had also proposed that the "marketing carrier" (i.e., the airline selling the ticket) would receive a cost-based distribution fee, roughly equivalent to a travel agent's fee, for tickets sold under its code. Thus, company officials said, the best way for each airline to maximize its revenue and profits would be to sell as many seats as possible on its own aircraft.

We interviewed industry experts when United and Delta were still planning a code-sharing alliance. These experts maintained that such an alliance would likely harm consumers by reducing competition between the two airlines, eventually leading to higher fares. They said that over time, airlines in this type of alliance would jointly identify the markets where it would make financial sense for them to reduce or eliminate capacity, especially those markets where the partner airline had more flights. They said that because each airline's management would retain a strong incentive to maximize revenue and profit, each would benefit by reducing competition with its alliance partner. However, they added that detecting the exact point at which anticompetitive behavior is occurring, or could be attributed to the existence of the alliance rather than to

⁶⁰Because of the airlines' concerns about confidentiality, we were unable to conduct an independent review of the agreement.

**Appendix III
Potential Beneficial and Harmful Effects on
Consumers of the Alliance Initially Proposed
by United Airlines and Delta Air Lines**

independent business decisions, is extremely difficult. This same reasoning—that alliance partners would be unlikely to compete in markets that each served—was used by United when it filed a formal statement opposing American’s alliance with the TACA group.⁶¹

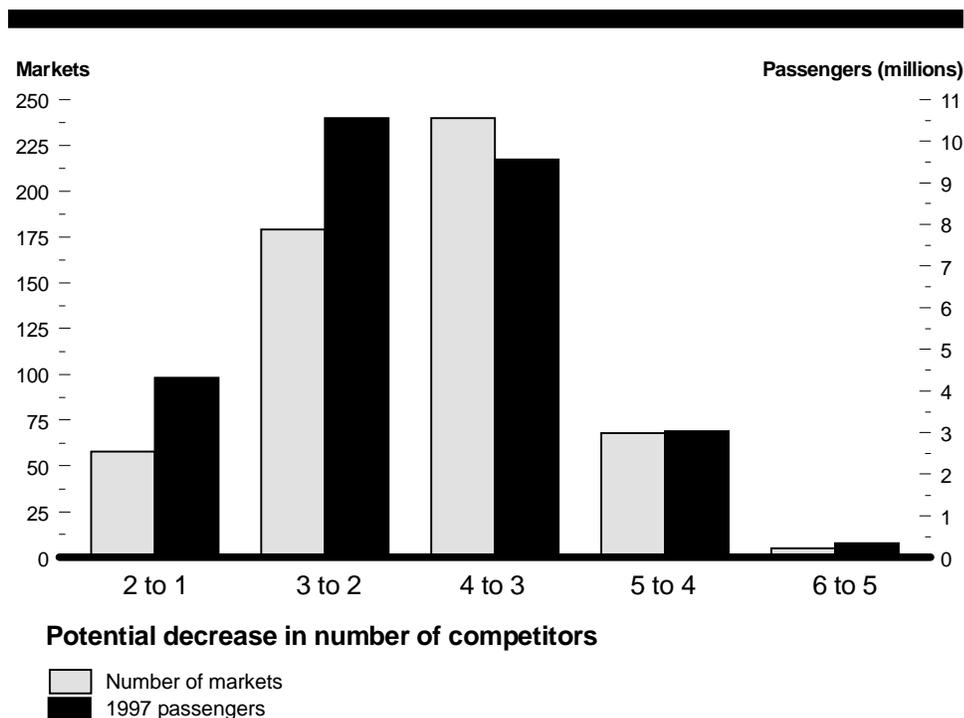
**A United-Delta
Code-Sharing Alliance
Would Reduce
Competition in Shared
Markets**

If the airlines established a code-sharing alliance and competed less with each other, approximately 27.8 million passengers in 550 distinct markets could be harmed through reductions in service and increases in airfares. Figure III.1 shows the number of markets that could be adversely affected by a code-sharing alliance if the two airlines did not continue to compete. The figure shows, among other things, that in 58 markets that served 4.3 million passengers in 1997, the alliance would become the only active competitor with a market share of more than 10 percent.

⁶¹Comments of United Airlines, Inc., on American Airlines, Inc., et al. and the TACA Group’s Reciprocal Code-Sharing Services Proceeding, Docket OST-96-1700-72 (Sept. 11, 1997). The TACA group comprises the national airlines for Guatemala, Panama, Costa Rica, Nicaragua, Honduras, and El Salvador.

**Appendix III
Potential Beneficial and Harmful Effects on
Consumers of the Alliance Initially Proposed
by United Airlines and Delta Air Lines**

Figure III.1: Number of Markets and Passengers Subject to Potentially Decreased Competition Under a United-Delta Code-Sharing Alliance



Source: GAO's analysis of data provided by Data Base Products, Inc., on the top 5,000 origin and destination markets in 1997.

In many of the markets where the number of active competitors would decrease if the two airlines did not continue to compete with each other, the changes in concentration would be significant.⁶² For example, in the 179 markets where the creation of a code-sharing alliance would decrease the number of active competitors from three to two, the alliance would become the largest carrier in 151 and the second largest carrier in the remaining 28. These 179 markets served over 10.5 million passengers in 1997.

⁶²The average change in the Hirschmann-Herfindahl Index (HHI) for these 550 markets is 1,208, with a range of 235 to 4,470. This suggests that a United-Delta code-sharing alliance would substantially increase concentration in certain markets.

**Appendix III
Potential Beneficial and Harmful Effects on
Consumers of the Alliance Initially Proposed
by United Airlines and Delta Air Lines**

In some markets, the establishment of a code-sharing alliance between United and Delta could have benefits that might, to some extent, mitigate the harmful effects that the alliance might otherwise create. Specifically, at airports where each airline alone has a relatively insignificant competitive presence, a code-sharing alliance would create a larger, potentially stronger entity, allowing it to compete more effectively against other airlines. In 1997, United and Delta each had a limited share (i.e., less than 10 percent) in 143 of the top 5,000 markets that served 11 million passengers during that year. However, under a code-sharing alliance, their combined market share would exceed 10 percent, and the partnership would constitute a new active competitor. Of these 143 markets, 59 are currently dominated by one major airline, and a United-Delta code-sharing alliance could increase competition for the 4.9 million passengers served in these markets. Nevertheless, our analysis shows that the addition of the alliance as an active competitor in these markets would make little overall difference because the alliance would remain relatively small, especially compared with other competitors.⁶³

**A United-Delta
Code-Sharing Alliance
Would Establish Dominant
Shares in Over 200 New
Markets**

According to industry experts, if the partners of a code-sharing alliance held a dominant share of the passenger traffic in shared (i.e., overlapping) markets, they could more easily coordinate capacity and maximize revenue, potentially harming passengers. Specifically, the partners could choose to maximize revenue by raising fares in selected markets where they hold a dominant share—thereby harming consumers in these markets—even without increasing their market share overall. Table III.2 shows that a United-Delta code-sharing alliance would have more than a 50-percent market share in 1,218 of the top 5,000 airport-pair markets. These 1,218 markets served more than 84 million passengers in 1997. The alliance itself would add 213 markets (11.8 million passengers) to the 1,005 markets already currently dominated by either United or Delta.

⁶³The average change in the HHI for the 143 United-Delta markets where the number of active competitors would increase because of the alliance is 69, with a range of 1 to 193. This indicates that the addition of the alliance as an active competitor would make relatively little overall difference in these markets.

**Appendix III
Potential Beneficial and Harmful Effects on
Consumers of the Alliance Initially Proposed
by United Airlines and Delta Air Lines**

**Table III.2: Potential Effect of a
United-Delta Code-Sharing Alliance on
Market Dominance**

	Number of markets with more than 50-percent market share	Number of passengers, 1997
United	273	30,227,283
Delta	732	42,681,590
Alliance (new)	213	11,754,050
Total	1,218	84,662,923

Note: Market share represents the percentage of 1997 passenger traffic carried by each airline.

Source: GAO's analysis of data provided by Data Base Products, Inc., on the top 5,000 origin and destination markets in 1997.

**A United-Delta
Code-Sharing Alliance
Would Have the Potential
to Affect Operating and
Marketing Barriers to
Entry**

At the nation's slot-controlled and gate-constrained airports, a United-Delta code-sharing alliance would not appreciably change the level of concentration. Any potential harm to consumers would probably be slight. For example, United's 48.3-percent share of traffic at Chicago's slot-controlled O'Hare Airport and Delta's 76.8-percent share of traffic at Cincinnati's gate-constrained airport would not be significantly affected by the combination, since neither airline maintains a significant presence at the other's hub. At O'Hare, a code-sharing alliance's share would increase to 51.7 percent; at Cincinnati, it would increase to 77.9 percent.

Nonaligned airlines, consumer groups and one industry expert stressed the adverse effect on competition that a code-sharing alliance such as that originally proposed between United and Delta could exercise through computer reservation systems. The alliance could gain a competitive advantage through multiple listings of the same code-sharing flight on the reservation screen, increasing the likelihood that the alliance's flights would be the first offered to the consumer.

Potential Beneficial and Harmful Effects on Consumers of a Code-Sharing Alliance Between American Airlines and US Airways

For American Airlines and US Airways, as for United and Delta, we assumed that their alliance could proceed to a partnership involving code-sharing. Because officials from both airlines said that they would implement code-sharing if the other two alliances moved forward with code-sharing arrangements, our analysis of the alliance's potential beneficial and harmful effects assumes that they would do the same. With code-sharing, the alliance could have significant effects—both positive and negative—on consumers throughout the United States.

A Code-Sharing Alliance Between American and US Airways Would Include New Destinations and Frequencies

If American Airlines and US Airways ultimately decide to implement code-sharing in a substantial number of markets, passengers could benefit from more on-line destinations, better routes and connections, and more flight frequencies. But because the alliance does not currently include code-sharing between main American and main US Airways, the two partners have not predicted any benefits.

An American-US Airways Code-Sharing Alliance Would Offer Consumers More On-Line Destinations

We found that a code-sharing alliance between American and US Airways could create new single- and double-connection markets. Because American currently serves 55 airports from its hubs that US Airways does not serve and US Airways serves 76 airports from its hubs that American does not serve, the alliance could, in theory, provide on-line service in 4,180 new markets. However, many of these markets would require more than two connections. When we eliminated these impractical routes,⁶⁴ we found that an American-US Airways code-sharing alliance could create 483 new single- or double-connection markets.

We found that such an alliance could create on-line single-connection service in 166 markets that served 2.0 million passengers in 1997.⁶⁵ In 47 of these markets, the alliance would produce superior service to that already offered by a competitor. However, in 119 markets, competing airlines' existing service would be superior or at least equal to that created by the alliance. We also found that an American-US Airways code-sharing alliance could create 317 new double-connection markets. However, either one of the alliance partners or a competitor already provided on-line service to each of these markets. Although an American-US Airways

⁶⁴See app. II for additional information on our methodology.

⁶⁵See app. II for additional information on our methodology.

**Appendix IV
Potential Beneficial and Harmful Effects on
Consumers of a Code-Sharing Alliance
Between American Airlines and US Airways**

code-sharing alliance would provide superior service to that offered by competitors in 3 markets, other competing airlines already provided superior or equal service to 314 markets. Table IV.1 provides our detailed analysis of the new on-line benefits that consumers could expect from this alliance.

Table IV.1: GAO's Analysis of Benefits Under an American-US Airways Code-Sharing Alliance: Airport Pairs That Would Receive New On-Line Service Through Single or Double Connections

Type of new on-line service	Total markets and average number of passengers per day who would receive new American-US Airways service		Number of markets in which competing airlines provide superior service ^a	Number of markets in which competing airlines provide equal service ^b	Number of markets in which competing airlines provide inferior service ^c
	Number of markets	Average number of passengers per day per market in 1997			
Single-connection	166	34	24	95	47
Double-connection	317	7	271	43	3

^aSuperior service includes current direct and nonstop service by competitors between airports that an American-US Airways code-sharing alliance could serve at best with single-connection service; and direct, nonstop, or single-connection service by competitors between airports that an American-US Airways code-sharing alliance could serve at best with double-connection service. Direct service differs from nonstop service in that a "direct" flight makes a scheduled stop between an origin and a destination, but passengers flying between the origin and destination are not required to change planes, while a nonstop flight between an origin and a destination makes no scheduled stops en route.

^bEqual service means that competing airlines currently offer service that matches an American-US Airways code-sharing alliance's potential single- or double-connection service.

^cInferior service means that competing airlines currently offer (1) no service or double-connection service between airports where an American-US Airways code-sharing alliance could offer single-connection service or (2) no service between airports where an American-US Airways code-sharing alliance could provide double-connection service.

Source: GAO's analysis of information provided by BACK Associates and Data Base Products, Inc.

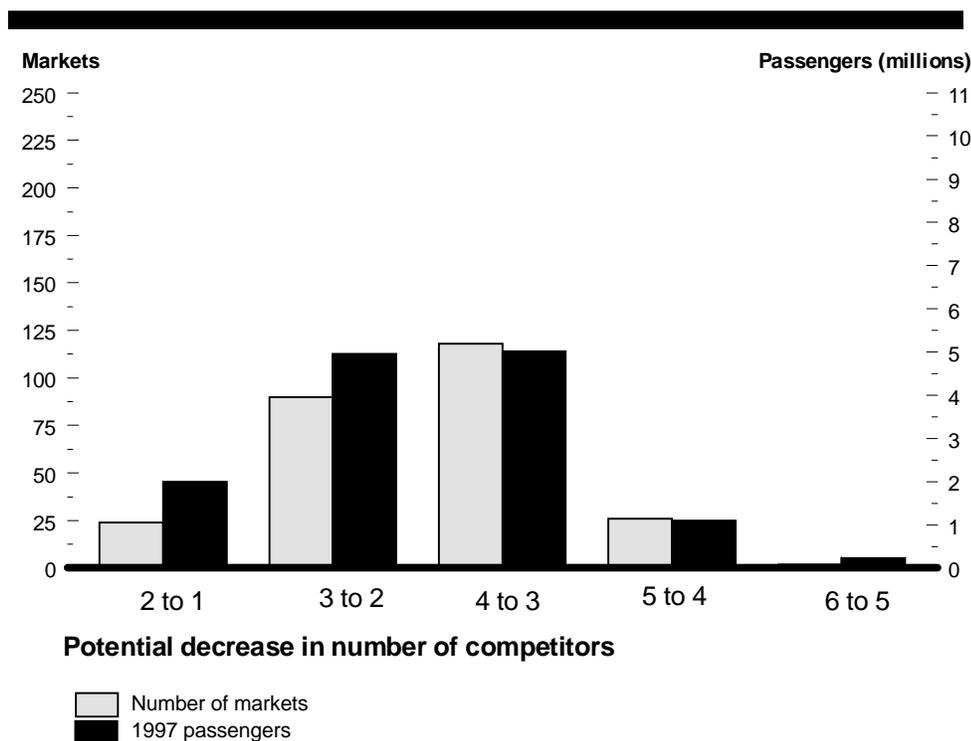
If the Partners Did Not Compete, an American-US Airways Code-Sharing Alliance Could Harm Consumers

Given the size of the partners' respective route networks, a code-sharing alliance between American and US Airways would produce much overlap and could harm many travelers if, over time, the airlines did not continue to compete as independent companies.

An American-US Airways Code-Sharing Alliance Could Potentially Reduce Competition in Shared Markets

If the current American-US Airways alliance moved to a code-sharing arrangement, it could reduce competition in 260 of the top 5,000 markets. These 260 markets served 13.3 million passengers in 1997. Moreover, such an alliance could eliminate competition in 24 of the markets, which served 2.0 million passengers in 1997. Such an alliance could also decrease the number of active competitors from three to two in 90 markets. Our analysis shows that in 80 of these 90 markets, the alliance would become the largest carrier, and in the remaining 10 markets, it would become the second largest carrier (see fig. IV.1).⁶⁶

Figure IV.1: Number of Markets and Passengers Subject to Potentially Decreased Competition Under an American-US Airways Code-Sharing Alliance



Source: GAO's analysis of data provided by Data Base Products, Inc., on the top 5,000 origin and destination markets in 1997.

⁶⁶The average change in the Hirschmann-Herfindahl Index (HHI) for these 260 markets is 1,217, with a range from 228 to 4,477. This suggests that an American-US Airways code-sharing alliance would significantly increase concentration in a number of origin and destination markets.

**Appendix IV
Potential Beneficial and Harmful Effects on
Consumers of a Code-Sharing Alliance
Between American Airlines and US Airways**

The harmful effects that could result from reducing the number of competitors in 260 markets could be mitigated by the benefits of increasing competition in some individual markets. Each of the two airlines has a limited share (i.e., less than 10 percent) in 60 of the top 5,000 markets. These 60 markets served 5.2 million passengers in 1997. Under a code-sharing alliance, the airlines' share in these markets would exceed 10 percent, and the alliance would represent a new active competitor. Of these 60 markets, 15 are currently dominated by a single airline. In these 15 markets, the alliance's creation could enhance competition, benefiting the 2.3 million passengers who were served in these markets during 1997. However, on average, the addition of the alliance as an active competitor would make relatively little difference in the level of concentration in these markets.⁶⁷

**An American-US Airways
Code-Sharing Alliance
Would Increase
Dominance in Certain
Markets**

With code-sharing, an American-US Airways alliance would hold a majority share in 977 of the top 5,000 origin and destination markets. These 977 markets served 58.2 million passengers in 1997. According to 1997 data, American had a dominant share in 278 markets that served about 25.1 million passengers, and US Airways had a majority share in 596 markets that served about 29 million passengers. Thus, a code-sharing alliance would give the partners a majority share in 103 additional markets. This increase in dominance is significant because it would allow the partners to raise fares in selected markets—thereby potentially harming consumers in these markets—without increasing their market share overall. These 103 markets served nearly 4.2 million passengers in 1997 (see table IV.2). These markets include routes between American's hubs in Dallas or Miami and US Airways's hubs in Philadelphia and Pittsburgh where the alliance would carry more than 80 percent of the passengers.

⁶⁷Under the American-US Airways alliance, the average change in the HHI for these 60 markets is 62, with a range of 5 to 156. This indicates that the addition of the alliance as an active competitor would make relatively little overall difference in these markets.

**Appendix IV
Potential Beneficial and Harmful Effects on
Consumers of a Code-Sharing Alliance
Between American Airlines and US Airways**

Table IV.2: Potential Effect of an American-US Airways Code-Sharing Alliance on Market Dominance

	Number of markets with more than 50-percent market share	Number of passengers, 1997
American	278	25,050,145
US Airways	596	28,995,941
Alliance (new)	103	4,171,404
Total	977	58,217,490

Note: Market share represents the percentage of 1997 passenger traffic carried by each airline.

Source: GAO's analysis of data provided by Data Base Products, Inc., on the top 5,000 origin and destination markets in 1997.

An American-US Airways Code-Sharing Alliance Would Also Increase Barriers to Entry

Operating barriers could be an issue for this alliance if it proceeds to code-sharing. Both airlines have significant presences at slot-controlled Washington Reagan National and New York LaGuardia airports. US Airways holds the largest percentage of slots at Washington Reagan National (35.4 percent). Under an alliance, it would control 49.0 percent of the slots there. US Airways also holds the largest percentage of slots at New York LaGuardia (27.0 percent). Under an alliance, it would control 44.5 percent of the slots there. The change in concentration that would occur under an alliance at gate-constrained airports would be less significant. US Airways already has more than 80 percent of the market (as measured by 1997 enplanements) at the Pittsburgh airport. We have previously reported fares more than 20 percent higher in constant dollars since deregulation at this airport.⁶⁸ However, because American does not have a significant market share at Pittsburgh (less than 2 percent), an alliance would not significantly increase the partners' market share.

In addition, some nonaligned airlines, consumer groups, and an industry expert stressed the adverse effect on competition that a code-sharing alliance between American and US Airways could exercise through computer reservation systems. The alliance could gain a competitive advantage through multiple listings of the same code-sharing flight on the reservation screen, increasing the likelihood that the alliance's flights would be the first offered to the consumer.

⁶⁸Airline Deregulation: Barriers to Entry Continue to Limit Competition in Several Key Domestic Markets (GAO/RCED-97-4, Oct. 18, 1996).

Implementation of All Three Alliances as Code-Sharing Arrangements Could Substantially Affect Competition

If all three of the alliances were to move forward as code-sharing arrangements, many questions would arise not only about the beneficial and harmful effects that could be attributed directly to the individual alliances but also about the cumulative effect of the alliances on competition in the industry, particularly for new-entrant and nonaligned airlines.

If all three alliances were implemented as code-sharing agreements, some consumers would benefit from extended route networks but other consumers could be harmed if competition were to decline. On the one hand, consumers would gain access to new airport pairs served by the three alliances, as well as additional flight frequencies, new routes with better connections, and expanded frequent flyer programs. On the other hand, according to the industry experts we interviewed, the alliances would stimulate little growth in passenger traffic and would generally shift passengers either among themselves or away from other nonaligned airlines in various markets. No airline partner currently plans to add new flights or airplanes in any given market.

Moreover, if the formation of code-sharing alliances created an environment in which the partners competed less vigorously, the number of competitors could be reduced in hundreds of domestic airport-pair markets that were among the top 5,000 in 1997, potentially affecting tens of millions of passengers. In addition, the number of markets dominated by the alliances would increase by about 10 percent, causing over two-thirds of U.S. travelers to fly in markets dominated by a single airline. Operating barriers could increase at the slot-controlled airports in New York and Washington, D.C., and if more markets were dominated by the alliances, marketing barriers such as those represented by combined frequent flyer programs could make entry by new airlines more difficult. Finally, if all three alliances were to move forward as code-sharing arrangements, the computer reservation systems that travel agents use to book airline tickets could begin to display each alliance's flights twice—once under each partner's code. Independent or new-entrant airlines then might have more difficulty getting their flights listed prominently in travel agents' displays.

Consumers Could Realize Some Benefits If All Three Alliances Were to Proceed as Code-Sharing Agreements

If the three alliances were to proceed as code-sharing agreements, they would be likely to create some new on-line destinations, allow some new or improved routes and connections, and expand frequent flyer and club benefits to members. However, because of some overlap among the alliances, the total number of unique, new markets would be smaller than the sum of such markets for each of the three alliances, and fewer passengers would be likely to benefit from the alliances than some of the airlines have predicted because their estimates assume no competitive responses from other airlines. Overall, the industry experts we interviewed indicated that the alliances would do little to stimulate growth in passenger traffic because they would mainly shift passengers among themselves, or from other airlines, in various markets.

Two alliances would be likely to create new frequencies and better connections (assuming no schedule changes by the airlines). Northwest-Continental officials and United-Delta officials did not count their possible new frequencies and routings in the same manner, and because American and US Airways originally proposed a much more limited alliance, they did not calculate how many new frequencies and routes a code-sharing alliance would make possible.

Many consumers may also benefit from the expanded frequent flyer options available under the current alliance agreements. However, the particular frequent flyer benefits will vary by alliance for consumers. In addition, the ability of consumers to obtain awards may depend on the availability of frequent flyer seats, the number of miles required to obtain awards, and the types of restrictions (e.g., blackout dates) that the airlines specify. Moreover, as noted earlier, award requirements may change over time.

For methodological reasons, we were unable to quantify potential cumulative benefits (e.g., new routes or flight frequencies) that could be created by the alliances, but we believe that these benefits could be substantial.

If Partners Did Not Compete, Code-Sharing Alliances Could Harm Consumers

It is difficult to determine whether three code-sharing alliances would reduce competition, but industry experts' concerns and the airlines' past records give cause for concern. There is agreement among some industry experts that competition would be likely to decline over time as the partners recognized their interdependence and began to maintain fares above the competitive level. Such an outcome is consistent with widely held economic principles that associate less competition with fewer

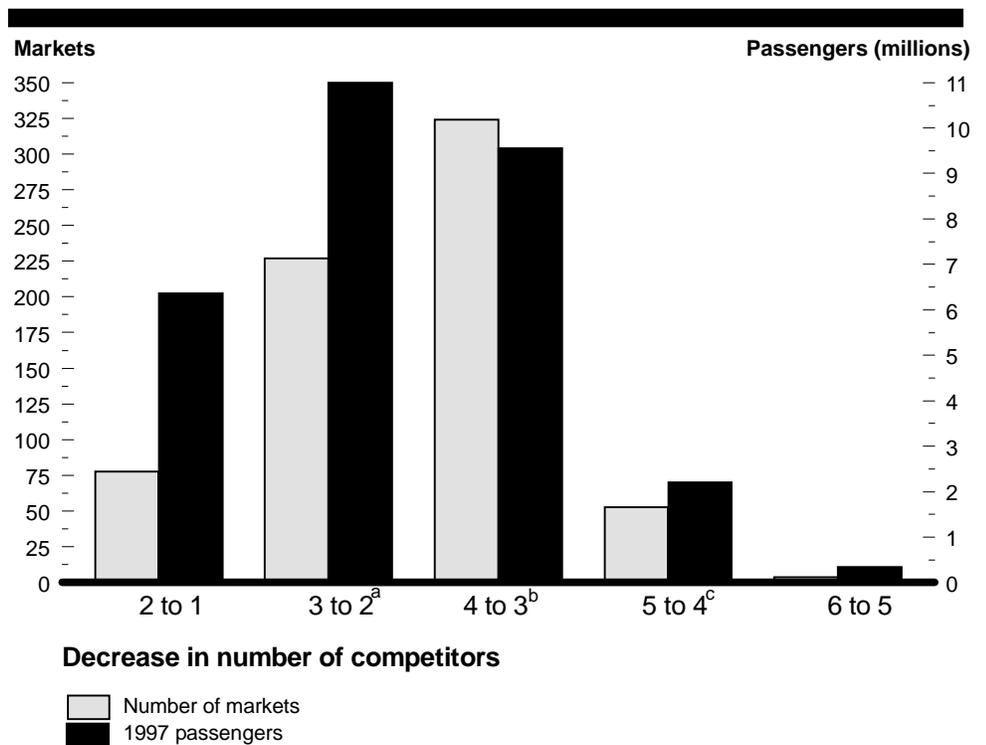
**Appendix V
Implementation of All Three Alliances as
Code-Sharing Arrangements Could
Substantially Affect Competition**

competitors. As the ties between major airlines were strengthened, the opportunities would increase for airlines to recognize their interdependence. If this should occur, competition would suffer and fares would rise.

**Competition Could Decline
in Shared Markets**

If all three alliances were to proceed with code-sharing, then the number of competitors could decline in some domestic airport-pair markets. As figure V.1 shows, 78 of the top 5,000 markets would become single-airline markets if the alliance partners did not compete with each other. Overall, concentration would also increase.

Figure V.1: Number of Markets and Passengers Subject to Potentially Decreased Competition Under Three Code-Sharing Alliances



^aIncludes 17 markets where the three alliances would reduce the number of active competitors from four to two.

^bIncludes 23 markets where the three alliances would reduce the number of active competitors from five to three.

**Appendix V
Implementation of All Three Alliances as
Code-Sharing Arrangements Could
Substantially Affect Competition**

^cIncludes two markets where the three alliances would reduce the number of active competitors from six to four.

Source: GAO's analysis of data provided by Data Base Products, Inc., on the top 5,000 origin and destination markets in 1997.

If the alliance partners did not compete, the harmful effects of fewer competitors could, to a limited extent, be mitigated by an increase in competition in some markets. In total, the three alliances could add an active competitor to 328 of the top 5,000 markets. Of these 328 markets, which served almost 22 million passengers in 1997, 97 are currently single-competitor markets. In these markets, which served over 7.8 million passengers in 1997, the alliances would add one or more active competitors.

**Market Dominance Would
Increase**

If three code-sharing alliances were implemented, the number of dominated markets would increase by 341 (about 10 percent), from 3,381 to 3,722 airport pairs—or about 75 percent of the top 5,000 markets in 1997.⁶⁹ Such an increase in market dominance is significant, according to industry analysts, who predicted that alliance partners might not be able to gain much market share overall but might be able to increase revenues in individual markets where they held a dominant position. In 1997, approximately 280 million passengers, or over two-thirds of those who flew domestically, flew in these markets.

**Barriers to Entry Could
Increase**

Overall, fares have decreased and service has improved since the airline industry was deregulated in 1978. Nevertheless, operating and marketing barriers have presented significant barriers to competition. The existence of these barriers increases the likelihood that additional concentration could harm consumers by discouraging entry by other established or new entrant airlines, thus allowing the alliance partners to raise their fares and/or reduce their services. As we have previously pointed out, operating restrictions such as slot controls and gate constraints can make it more difficult for new carriers to enter a market. In all cases, the alliances could add to the level of concentration at these airports, as shown in table V.1.

⁶⁹Non-alliance airlines—such as TWA, AmericaWest, and Southwest—dominated 1,035 of the top 5,000 routes in 1997. Over 96 million passengers flew on these routes. Thus, were the three alliances to proceed to code-sharing and not act independently, they would dominate 2,687 routes, on which over 183 million passengers flew in 1997.

**Appendix V
Implementation of All Three Alliances as
Code-Sharing Arrangements Could
Substantially Affect Competition**

Table V.1: Alliance Partners' Combined Market Share at Slot-Controlled and Gate-Constrained Airports

Constraint	Airport	Prealliance market share ^a /dominant airline	Postalliance market share ^a		
			United-Delta	American-US Airways	Northwest-Continental
Slot	Chicago O'Hare	48.3/United	51.7	40.1	4.2
	Washington Reagan National	35.4/US Airways	24.0	49.0	14.4
	New York Kennedy	30.0/American	28.9	30.1	1.1 ^b
	New York LaGuardia	27.0/US Airways	34.3	44.5	10.1
Gate	Charlotte	83.8/US Airways	3.3	85.3	1.4
	Cincinnati	76.8/Delta	77.9	0.9	1.4
	Detroit	77.8/ Northwest	4.8	4.8	79.4
	Minneapolis	80.5/Northwest	5.9	3.9	81.5
	Newark	60.8/Continental	15.0	12.1	64.6
	Pittsburgh	82.2/US Airways	3.6	83.1	2.5

^aMarket share is expressed as the percentage of total 1997 enplanements at each airport.

^bContinental did not serve New York's Kennedy Airport in 1997.

Source: GAO's analysis of DOT's data.

Although, in most cases, the percentage increase in market share would be small, in every case, the alliance partner with the lesser share might have an opportunity to improve its market position, potentially increasing the difficulty for other airlines of gaining access at these 10 important airports. In the complaint it filed against Northwest and Continental, DOJ also noted that difficulty in obtaining access to gate facilities impedes new entry. One opportunity that the lesser partner might derive from its immediate access to the dominant partner's strength at the airport is that its flights might appear more attractive to consumers. For example, under a code-sharing alliance, Texas consumers might find Continental a more desirable airline to fly to Minneapolis, where Northwest enjoys a dominant market share. This is because Continental's presence in the alliance would allow it to market, and to offer, an increased number of daily flights in these markets under its code on Northwest's planes. Another opportunity for the lesser partner might be to remove aircraft from airports where its operations are unprofitable and to shift passengers to its partner's aircraft, thereby strengthening its partner's position at that airport. For example, if Northwest and Continental each operated flights from Minneapolis to Cleveland, but Continental served that market only with smaller commuter aircraft instead of larger jets, it might choose to put its passengers on

Appendix V
Implementation of All Three Alliances as
Code-Sharing Arrangements Could
Substantially Affect Competition

Northwest's jet flights. Concentration at airports other than the 10 cited in table V.1 could also increase, potentially preventing small and new-entrant carriers from gaining market share at heavily concentrated airports.

We have also reported that airline sales and marketing practices may make competitive entry more difficult for other airlines.⁷⁰ However, we have not been able to quantify the effects of these barriers on competition for any or all of the alliances. Nevertheless, marketing practices such as frequent flyer programs and special bonuses to travel agents for booking traffic on an incumbent airline may encourage travelers to choose one airline over another on the basis of factors other than the best fares. Such practices may be most important if an airline is already dominant in a given market or markets. Because the alliances could increase dominance by about 10 percent in the top 5,000 markets in 1997, marketing barriers in these metropolitan areas would be likely to become more important. DOJ also noted the effect that such practices had on impeding competition from new entrants in the complaint it filed against Northwest and Continental. Nonetheless, mitigating the effect of these practices without banning them is difficult, and banning them involves a trade-off between their potential anticompetitive effects and the consumer benefits that some of them bring.

Some nonaligned airlines, consumer groups, and an industry expert stressed the adverse effects on competition that code-sharing alliances could exercise through computer reservation systems. Through code-sharing, flights that previously appeared in these systems under one airline's code could now appear twice—once under the operating airline's code and once under the code-sharing partner's. Connecting flights between the partners could appear three times, once under each partner's code and once as a connecting flight. Thus, it is likely that the creation of a code-sharing alliance would increase the number of flights listed for the partners on the first reservation screen, from which travel agents often book flights. Where three alliances provided code-sharing flights in the same markets, six or more code-sharing flights might appear on the first screen, crowding out opportunities for other airlines.

⁷⁰See, for example, *Aviation Competition: International Aviation Alliances and the Influence of Airline Marketing Practices* (GAO/T-RCED-98-131, Mar. 19, 1998).

Major Contributors to This Report

Resources,
Community, and
Economic
Development
Division, Washington,
D.C.

Aaron Casey
Elizabeth Eisenstadt
Tina Kinney
Steven Martin
Sara Ann Moessbauer
Marnie Shaul

Seattle Regional
Office

Paul Aussendorf
Stan Stenersen

Office of General
Counsel

David Hooper

Office of the Chief
Economist

Joseph Kile

Major Contributors to This Report

Related GAO Products

Aviation Competition: Proposed Domestic Airline Alliances Raise Serious Issues (GAO/T-RCED-98-215, June 4, 1998).

Domestic Aviation: Service Problems and Limited Competition Continue in Some Markets (GAO/T-RCED-98-176, Apr. 23, 1998).

Aviation Competition: International Aviation Alliances and the Influence of Airline Marketing Practices (GAO/T-RCED-98-131, Mar. 19, 1998).

Airline Competition: Barriers to Entry Continue in Some Domestic Markets (GAO/T-RCED-98-112, Mar. 5, 1998).

Domestic Aviation: Barriers Continue to Limit Competition (GAO/T-RCED-98-32, Oct. 28, 1997).

Airline Deregulation: Addressing the Air Service Problems of Some Communities (GAO/T-RCED-97-187, June 25, 1997).

International Aviation: Competition Issues in the U.S.-U.K. Market (GAO/T-RCED-97-103, June 4, 1997).

Domestic Aviation: Barriers to Entry Continue to Limit Benefits of Airline Deregulation (GAO/T-RCED-97-120, May 13, 1997).

Airline Deregulation: Barriers to Entry Continue to Limit Competition in Several Key Domestic Markets (GAO/RCED-97-4, Oct. 18, 1996).

Domestic Aviation: Changes in Airfares, Service, and Safety Since Airline Deregulation (GAO/T-RCED-96-126, Apr. 25, 1996).

Airline Deregulation: Changes in Airfares, Service, and Safety at Small, Medium-Sized, and Large Communities (GAO/RCED-96-79, Apr. 19, 1996).

International Aviation: Airline Alliances Produce Benefits, but Effect on Competition Is Uncertain (GAO/RCED-95-99, Apr. 6, 1995).

Airline Competition: Higher Fares and Less Competition Continue at Concentrated Airports (GAO/RCED-93-171, July 15, 1993).

Computer Reservation Systems: Action Needed to Better Monitor the CRS Industry and Eliminate CRS Biases (GAO/RCED-92-130, Mar. 20, 1992).

Related GAO Products

Airline Competition: Effects of Airline Market Concentration and Barriers to Entry on Airfares (GAO/RCED-91-101, Apr. 26, 1991).

Airline Competition: Industry Operating and Marketing Practices Limit Market Entry (GAO/RCED-90-147, Aug. 29, 1990).

Airline Competition: Higher Fares and Reduced Competition at Concentrated Airports (GAO/RCED-90-102, July 11, 1990).

Airline Deregulation: Barriers to Competition in the Airline Industry (GAO/T-RCED-89-65, Sept. 20, 1989).

Airline Competition: Fare and Service Changes at St. Louis Since the TWA-Ozark Merger (GAO/RCED-88-217BR, Sept. 21, 1988).

Competition in the Airline Computerized Reservation Systems (GAO/T-RCED-88-62, Sept. 14, 1988).

Airline Competition: Impact of Computerized Reservation Systems (GAO/RCED-86-74, May 9, 1986).

Airline Takeoff and Landing Slots: Department of Transportation's Slot Allocation Rule (GAO/RCED-86-92, Jan. 31, 1986).

Deregulation: Increased Competition Is Making Airlines More Efficient and Responsive to Consumers (GAO/RCED-86-26, Nov. 6, 1985).

Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. VISA and MasterCard credit cards are accepted, also. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:

U.S. General Accounting Office
P.O. Box 37050
Washington, DC 20013

or visit:

Room 1100
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC

Orders may also be placed by calling (202) 512-6000 or by using fax number (202) 512-6061, or TDD (202) 512-2537.

Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (202) 512-6000 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.

For information on how to access GAO reports on the INTERNET, send an e-mail message with "info" in the body to:

info@www.gao.gov

or visit GAO's World Wide Web Home Page at:

<http://www.gao.gov>

**United States
General Accounting Office
Washington, D.C. 20548-0001**

**Bulk Rate
Postage & Fees Paid
GAO
Permit No. G100**

**Official Business
Penalty for Private Use \$300**

Address Correction Requested

