

## CHAPTER III

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### AVIATION

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Deregulation of the domestic airlines during the 1980s has greatly increased the demands on aviation infrastructure and the need for federal aviation services. Yet there has been no change in the structure of federal programs for developing aviation infrastructure since the Airport and Airway Trust Fund was enacted in 1970. Change has been hindered by concern about the persistent, large uncommitted balance in the trust fund. Confusion as to the role of the fund has obscured the real levels of federal subsidies to air travelers.

#### THE CHANGING FEDERAL ROLE IN AVIATION

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The government's interest in aviation began as a user of aviation services, but quickly shifted to that of a regulator of flying activity. As with highways, federal interest in air transport was initially as a means to deliver the mails. As early as 1920, when private flying was still at best a chancy affair, the U.S. Air Mail Service provided trans-continental deliveries. By 1924 it was making daily flights. The Air Commerce Act of 1926 broadened the federal role to one of promoting aviation as a mode of commercial transportation by establishing and policing safety standards for aviators and their equipment.

##### The Growth of Regulation

The 1938 Civil Aeronautics Act set up two new institutions: a federal air traffic control service for commercial aircraft (based in part on towers taken over from private operators during the 1930s), and a separate agency, the Civil Aeronautics Board (CAB), to undertake economic and safety regulation. In 1958, the Federal Aviation Act consolidated civil and military air traffic control in a new agency (now the Federal Aviation Administration, or FAA, in the Department of

Transportation) that also took over authority for safety standards for aircraft and aviation personnel from the CAB.

The federal government also provided significant financial support for airport development. The Federal Airport Act of 1946 first authorized federal assistance for airport investment. The resulting federal aid to airports program provided nearly half the capital spending on airports between 1947 and 1969.<sup>1</sup> Until 1987, when they were leased to a regional commission, the two commercial airports serving Washington, D.C., were developed and operated by the federal government.

#### The Airport and Airway Trust Fund

Two changes made in the 1970s continue to influence federal aviation policy. First, the Airport and Airway Development Act of 1970 established the Airport and Airway Trust Fund to collect taxes from aviation users and disburse them for aviation programs. The trust fund, which took over several existing taxes, became the source of airport development grants, of financing for air traffic control investments, and of some FAA funding.

From the first, confusion and controversy surrounded the purposes of the trust fund. The Congress wanted to use the fund to finance modernization and development of the aviation system; the Administration wanted to use it to finance the FAA. Conflict arose in the first year over the Administration's proposal to reduce capital spending to well below what had been authorized and to apply the balance of trust fund revenue to FAA operations. This would have meant funding 70 percent of FAA operations from the trust fund, or more than the total spending for aviation capital programs. At the time, airport delays were lengthy and the Administration was criticized for not using the earmarked taxes to increase capacity. In 1971, an amendment to the Airport and Airway Development Act of 1970 (Public Law 92-174) revoked trust fund financing of FAA operations.

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1. John R. Wiley, *Airport Administration and Management* (Westport, Conn.: Eno Foundation, 1986).

But many Members of Congress, as well as many Administration officials, felt that the aviation user taxes should cover more federal spending for the FAA. In 1973, the trust fund began to accumulate a cash surplus above the annual spending for capital programs. Authority to finance some FAA operations from the trust fund was restored in 1976, with safeguards to ensure priority for capital spending. Successive reauthorizations of the trust fund have restricted its support for FAA operations, while increasing authorized spending for airport development and, since 1982, for investments in air traffic control. As a result of caps on trust fund financing for operations, and penalties imposed when capital spending falls below specified levels, it is not clear whether aviation users are expected to pay their way.<sup>2</sup>

### Deregulation

The second important policy change in the 1970s was the passage of the Airline Deregulation Act in 1978. The Congress set up a timetable to phase out the CAB's economic regulation of the domestic airlines by the end of 1984. In fact, deregulation was achieved much earlier. Through administrative actions of the CAB, domestic airlines were effectively freed of federal restrictions on routes and fares by the spring of 1980. Airfreight services had been deregulated in 1977.

### Recent Legislation

The 1987 Airport and Airway Safety and Capacity Expansion Act reauthorizes aviation infrastructure programs. It calls for increased aid from the trust fund for airport development and for FAA modernization. It also continues subsidies for air services to small communities (first authorized under the Airline Deregulation Act of 1978) and trust fund financing for the aviation weather services of the National Oceanic and Atmospheric Administration (first authorized for 1983, although investment to improve aviation weather information has always been financed from the trust fund).

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2. A lengthier discussion of these points will be contained in a forthcoming Congressional Budget Office report on the status of the Airport and Airway Trust Fund.

Operations of the FAA are to be financed both from the trust fund and from federal funds. But aviation tax rates will be reduced by 50 percent in calendar year 1990 if in 1988 and 1989 obligations for airport grants plus amounts made available for FAA facilities and equipment plus amounts for FAA research, engineering and development are less than 85 percent of the total authorized. Under CBO's 1988 baseline projections, this tax reduction is expected to occur. Despite the revenue falloff, the uncommitted portion of the trust fund's cash surplus is projected, in CBO's baseline, to fall by only one-third, from \$6 billion at the end of 1988 to \$4 billion at the end of 1993.

## ACHIEVEMENTS

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Fundamental changes in air transportation during the 1980s have altered the structure of demand for aviation infrastructure and federal aviation services. Deregulation has improved the efficiency of air transportation and made it cheaper and more accessible. Major changes in the network of air routes have led to new patterns of demand for airports and for air traffic control. At the same time, growing traffic has renewed congestion at major airports, and some people call for traffic restrictions to maintain safety levels.

Federal aviation policies have fostered an aviation industry that is largely self-supporting: of the \$70 billion in annual spending for aviation facilities and services in 1986, only about 7 percent came from federal budgets (see Table 10). Yet federal budgets support critical elements on which the efficiency of air transport rests. All costs of the airway system (that is, for air traffic control and other navigation services that determine the flow of aircraft traffic and its access to airports) are paid federally, and federal airport grants pay about one-fifth of airport investment.

But federal assistance has not been very effective in meeting the needs of the aviation system as a whole. Confusion over who pays for aviation aid--born in the confusion over what the Airport and Airways Trust Fund should finance--and the contradiction between the trust fund's large balances and the need for capital investment, have obscured policymaking. Major commercial airports have had to raise most of their own development capital. Federal aid, rather than focus-

ing on expanding the capacity of major airports, has gone disproportionately to small commercial airports and to airports serving general (nonscheduled) aviation flights by small aircraft. This sector, which pays the lowest share of costs into the trust fund and gets the most generous aid from it, has declined continuously over the past nine years. Meanwhile, the continued effectiveness of the air traffic control system, which determines the capacity of the aviation system overall, is threatened by delays in completing the 1982 modernization plan, and by poor pricing of landing and take-off slots.

Three questions arise in assessing federal aviation assistance:

- o Who pays for federal aviation infrastructure aid and services?
- o How effective is federal airport aid in building aviation capacity? and
- o How well is the air traffic control system working?

#### Who Pays for Federal Programs?

The Airport and Airway Trust Fund finances about 28 percent of airport and airway expenditures. Airline passengers finance most of the trust fund: nearly 90 percent of the trust fund's revenue is from the tax on domestic airline passenger tickets (see Figure 4). In every year since 1973 (except 1981 and 1982), the trust fund has collected more in taxes than it has disbursed; in the 1983-1987 period, fund revenue surpassed outlays by \$2.5 billion.

In recent years, however, an equal amount of airport and airway spending has been financed outside the trust fund, by the general taxpayer. Figure 5 shows federal funding sources in 1986. Whether spending from federal funds represents a subsidy by the general taxpayer to aviation users depends upon how costs are apportioned between federal and nonfederal purposes. Federal use of the air systems is mainly military, while nonfederal users are principally commercial and general aviation. Aeronautical research potentially benefits both

TABLE 10. NATIONAL FINANCING FOR AVIATION  
FACILITIES AND SERVICES, 1986  
(In billions of dollars)

Type of Expenditure	Airport and Airway Trust Fund <sup>a</sup>	Federal Funds <sup>b</sup>	Nonfederal Funds <sup>c</sup>	All Spending
<b>Airports</b>				
Investment <sup>d</sup>	0.9	0.0	1.3	2.2
Operations <sup>d</sup>	0.0	0.0	2.3	2.3
Standards	<u>e</u>	<u>e</u>	<u>0.0</u>	<u>e</u>
Subtotal, Airports	0.9	0.0	3.6	4.5
Percent of All Spending	19	0	81	100
<b>Airways</b>				
Investment	0.8	0.0	0.0	0.8
Research	0.3	0.0	0.0	0.3
Operations	0.4	2.2	0.0	2.7
Other	<u>0.0</u>	<u>0.1</u>	<u>0.0</u>	<u>0.1</u>
Subtotal, FAA	1.5	2.3	0.0	3.8
National Oceanic and Atmospheric Administration	<u>e</u>	<u>0.0</u>	<u>0.0</u>	<u>e</u>
Subtotal, Airways	1.5	2.3	0.0	3.8
Percent of All Spending	39	61	0	100
Subtotal, Airports and Airways	2.3	2.3	3.6	8.3
Percent of All Spending	28	28	44	100
<b>Other Public Services</b>				
Aeronautical Research	0.0	0.3	3.4 <sup>f</sup>	3.8
Department of Transportation Air Policy	0.0	e	0.0	e
National Transportation Safety Board (Part) <sup>g</sup>	0.0	e	0.0	e
Aircraft Purchase Loan Guarantee Program	<u>0.0</u>	<u>e</u>	<u>0.0</u>	<u>e</u>
Subtotal, Other Public Services	0.0	0.4	3.4	3.8
Percent of All Spending	0	10	90	100

(Continued)

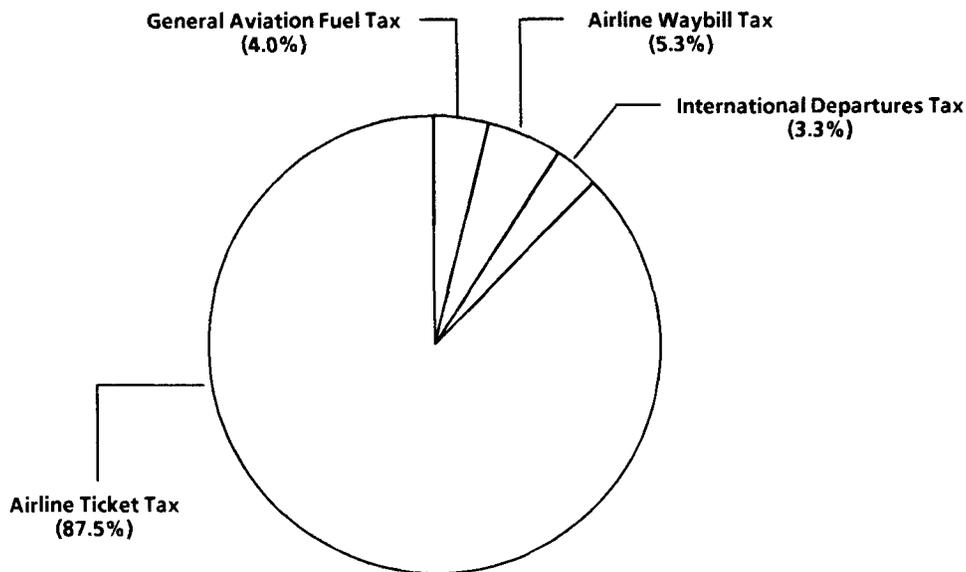
TABLE 10. Continued

Type of Expenditure	Airport and Airway Trust Fund <sup>a</sup>	Federal Funds <sup>b</sup>	Nonfederal Funds <sup>c</sup>	All Spending
(Continued)				
Subtotal, Airports, Airways and Public Services	2.3	2.7	7.1	12.1
Percent of All Spending	19	22	58	100
<b>Air Transport Services</b>				
General Aviation	0.0	0.0	7.6	7.6
Commercial Services				
Domestic passenger services	0.0	0.0	36.6	36.6
International passenger services	0.0	0.0	6.6	6.6
Freight services	<u>0.0</u>	<u>0.0</u>	<u>7.2</u>	<u>7.2</u>
Subtotal, Air Transport Services	0.0	0.0	58.0	58.0
Percent of All Spending	0	0	100	100
Total Expenditures	2.3	2.7	65.1	70.1
Percent of All Spending	3	4	93	100

SOURCE: Congressional Budget Office, based on data from federal and agency budgets, the Department of Transportation, the Bureau of the Census, and Transportation Policy Associates.

- a. Paid from dedicated taxes on users.
- b. Paid from general revenue.
- c. Paid from state, local, or private funds. Most airports are reimbursed for capital and operations expenditures from charges on users.
- d. Federal expenses for the National and Dulles airports serving Washington, D.C., are included with nonfederal funds to reflect the airports' 1987 transfer to a regional commission.
- e. Less than \$50 million.
- f. Nonfederal funds figure is for 1983, and includes some financing for missile R&D.
- g. An arbitrary 50 percent of NTSB activities is attributed to aviation.

Figure 4.  
Sources of Revenue for the Airport and  
Airway Trust Fund, 1983-1987



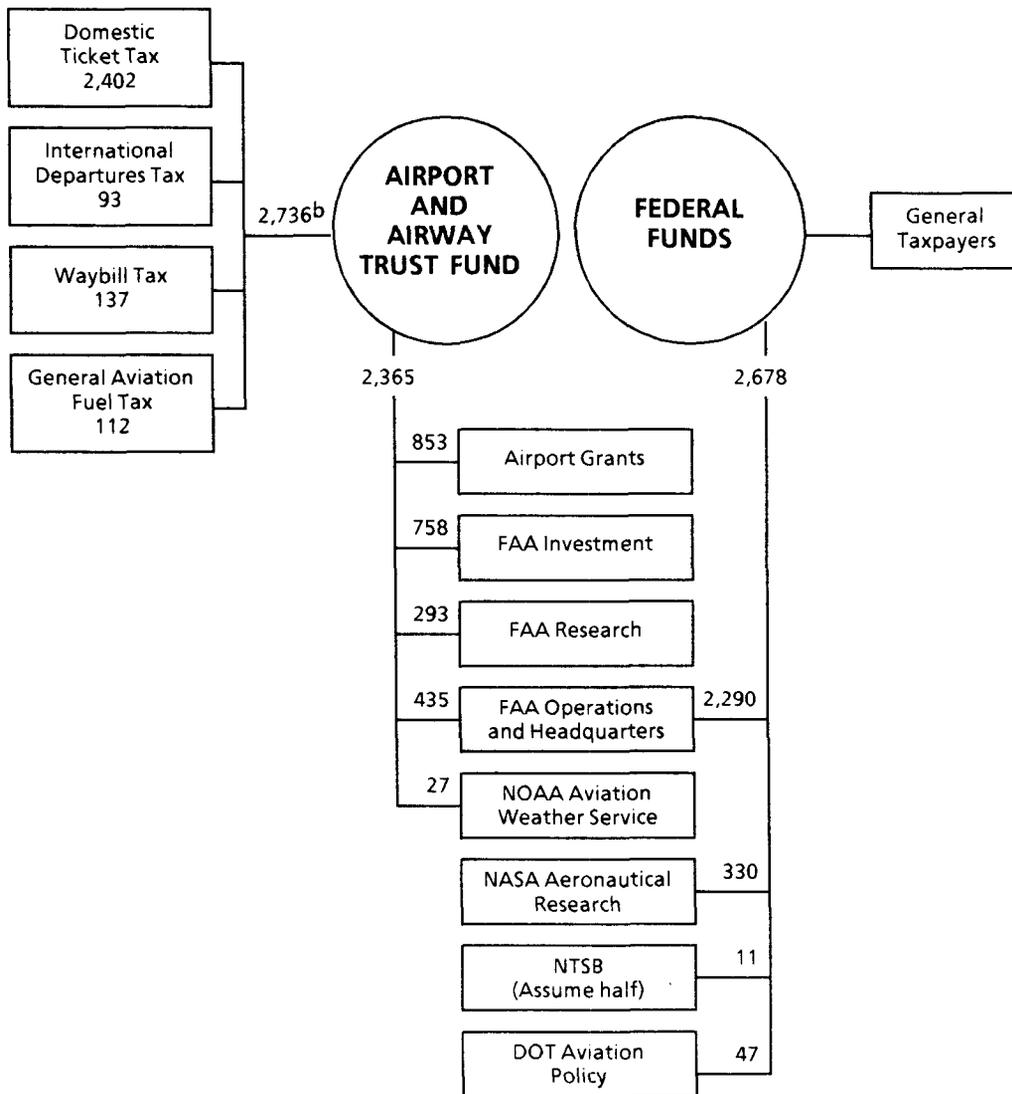
SOURCE: Congressional Budget Office, from federal budget data.

military and civilian flying. Policy administration by the government may promote broad national purposes for trade or regional development, as well as the direct interests of aviation firms and their customers.

The most clearly identifiable federal subsidy for aviation interests is made through the air navigation system. The FAA has estimated that 85 percent of the use of the air navigation system is attributable to nonfederal users.<sup>3</sup> If that is the case, since the trust fund share of FAA outlays in 1988 is estimated to be 56 percent, the additional 29 percent coming from general revenues can be characterized as a subsidy for nonfederal users of the system.

3. Daniel E. Taylor, *Airport and Airway Costs: Allocation and Recovery in the 1980s*, Final Report, U.S. Department of Transportation (February 1987).

**Figure 5.**  
**Federal Funding for Airports and Airways in 1986**  
 (In millions of dollars)<sup>a</sup>



SOURCE: Congressional Budget Office, based on federal budget data.

NOTES: FAA = Federal Aviation Administration.  
 NOAA = National Oceanic and Atmospheric Administration.  
 NASA = National Aeronautics and Space Administration.  
 NTSB = National Transportation Safety Board.  
 DOT = Department of Transportation.

- a. Excludes federal spending on Washington metropolitan airports, which were transferred to a regional authority during 1987.
- b. Excludes tax refunds of \$8 billion.

Other federal subsidies are harder to identify. Aviation research outlays in the National Aeronautics and Space Administration's budget have totaled \$5.6 billion over the last 10 years; they were \$635 million in 1987. Allowing only for the direct purposes of the research would give about a 50-50 split in spending between military and civilian projects.<sup>4</sup> But research expenditures are difficult to assign between federal and nonfederal users, particularly because research applications may spill over from civilian to military flying (and vice versa). Whether and how policy spending--for example, that of the Civil Aeronautics Board and current Department of Transportation policy programs, principally for international aviation and consumer protection--could be apportioned among federal and aviation interests is problematic.

Table 11 shows the official estimate and an alternative estimate of the balance between user taxes and aviation spending. According to the official data, the trust fund has accumulated a cash balance of \$10 billion.<sup>5</sup> The alternative estimate shows, however, that this balance represents a transfer from general taxpayers to aviation interests. If 85 percent of FAA spending--the proportion attributed to nonfederal users--had to be financed from the trust fund, the fund would have required supplements from general funds in every year. Under this accounting, cumulative federal subsidies for aviation over the life of the trust fund are close to \$16 billion, over half as much again as the official fund cash balance. In other words, aviation users have received much more from federal budgets (considering both trust fund and federal fund spending) than they have contributed in dedicated taxes.

### Does Federal Aid Add to Capacity?

Federal airport aid adds little to the facilities needed for commercial air transportation. A 1984 CBO study showed that the role of federal programs in financing the major commercial airports was relatively small. Between 1978 and 1982, commercial airports raised an average

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4. National Aeronautics and Space Administration, *Vertical Cut Analysis* (February 1988).

5. Of this amount, the uncommitted balance is \$5.6 billion.

TABLE 11. ALTERNATIVE ESTIMATES OF AVIATION TAXES AND SPENDING, 1971-1987 (In billions of dollars)

Fiscal Year	User Taxes	Actual Trust Fund			Alternative Estimate		
		Outlays	Interest	Cash Balance <sup>a</sup>	Total FAA Outlays <sup>b</sup>	85 Percent of FAA Outlays	Taxes minus 85 Percent of Outlays
1971	0.6 <sup>c</sup>	0.3	0.0	0.9	1.5	1.3 <sup>d</sup>	-0.8
1972	0.6 <sup>c</sup>	1.4	0.0	1.1	1.6	1.4 <sup>d</sup>	-0.7
1973	0.8 <sup>c</sup>	0.7	0.0	1.2	1.8	1.6 <sup>d</sup>	-0.8
1974	0.8	0.5	0.0	1.5	1.9	1.6 <sup>d</sup>	-0.7
1975	1.0	0.6	0.1	2.0	2.0	1.7 <sup>d</sup>	-0.7
1976	0.9	0.5	0.1	2.6	2.1	1.8	-0.9
TQ <sup>e</sup>	0.3	0.1	0.0	2.7	0.5	0.4	-0.1
1977	1.2	0.9	0.2	2.3	2.4	2.0	-0.8
1978	1.3	1.1	0.2	3.7	2.8	2.4	-1.0
1979	1.5	1.1	0.3	4.4	2.8	2.4	-0.9
1980	1.9	1.2	0.4	5.4	3.1	2.7	-0.8
1981	1.2 <sup>f</sup>	1.3	0.6	4.7	3.2	2.7	-1.5
1982	1.2 <sup>f</sup>	1.5	0.5	3.9	2.9	2.5	-1.3
1983	2.2	1.8	0.5	4.8	3.4	2.9	-0.7
1984	2.5	1.4	0.5	6.4	3.8	3.3 <sup>g</sup>	-0.8
1985	2.9	2.6	0.7	7.4	4.3	3.7 <sup>g</sup>	-0.8
1986	2.7	2.4	0.8	8.6	4.7	4.0 <sup>g</sup>	-1.3
1987	<u>3.1</u>	<u>2.6</u>	<u>0.9</u>	<u>9.9</u>	<u>4.9</u>	<u>4.2 <sup>g</sup></u>	<u>-1.1</u>
Total	26.6	22.0	6.0		49.7	42.4	-15.8

SOURCE: Congressional Budget Office, based on budget data.

- a. End-of-year cash balance.
- b. Total FAA outlays are the sum of expenditures from the Airport and Airway Trust Fund and from federal funds, as shown in Table 10.
- c. Data do not include transfers to the trust fund of unexpended appropriations of \$621 million in 1971 and \$255 million in 1972, or supplementary payments from general revenue of \$647 million in 1972 and \$73 million in 1973.
- d. Data include spending for the Aviation Advisory Commission during the 1971-1975 period.
- e. Transition quarter between fiscal year ending June 30, 1976, and fiscal year running from October 1, 1976, to September 30, 1977.
- f. Data do not include aviation tax receipts of \$1.2 billion in 1981 and \$1 billion in 1982 that were not credited to the trust fund.
- g. Data include trust fund transfers to the National Oceanic and Atmospheric Administration for the aviation weather service, beginning in 1984.

of \$1 billion annually (at 1982 prices) in bond issues for capital projects, at which rate they would have been able to finance most of their projected capital needs for the remainder of the 1980s.<sup>6</sup> Since major airports typically offer investment-grade bonds, ensuring their ready sale at reasonable interest costs, the airlines can often lease the improved facilities at rates lower than if they built the facilities themselves.

As noted earlier, federal aid to small commercial airports and to general aviation (nonscheduled flying) terminals has been relatively much more important and more generous than has federal assistance to the major airline airports. More than 60 percent of national airport investment occurs at large and medium hub airports, and federal grants constitute one-quarter or less of that; grants increase their share rapidly as the size of the airports declines (see Table 12). Grants finance three-quarters or more of investment in general aviation reliever facilities (built to attract nonscheduled traffic away from airline airports) although these undertake only 6 percent of national investment; grants also finance around 80 percent of improvements at small terminals for both commercial flights and nonscheduled flying. In sum, most of the capital projects at general aviation and reliever airports are financed from federal capital grants; subsidies to these two groups absorb 30 percent of federal airport assistance (see Figure 6).

Federal aid for small commercial airports has helped the communities they serve maintain communications links. Thus it may be said to meet a national purpose. But aid for general aviation has not been effective in meeting its goal of relieving traffic congestion at major points. Very little general aviation traffic is handled by airports subject to chronic long-term congestion. At Chicago's O'Hare Airport, for example, only 5 percent of flights are general aviation; at the three main New York area airports, general aviation is only 8 percent to 9 percent of flights; at Boston's Logan Airport, general aviation accounts for just over 10 percent of all arrivals and departures. These figures reflect both the high levels of scheduled airline service to these airports, and the pressure on facilities that allows relatively poor accommodation for general aviation. Thus, for many years, improve-

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6. Congressional Budget Office, *Financing U.S. Airports in the 1980s* (April 1984).

TABLE 12. SOURCES OF AIRPORT INVESTMENT

Airport Category	Number of Airports <sup>a</sup>	Percent of National Investment	Source of Investment (As percent of total)		
			Federal Grants	Bond Proceeds	Other
All Airports	3,243	100	35-40	50-65	Under 15
<b>Commercial Airports</b>					
Primary					
Large hubs <sup>b</sup>	29	43	20	80-100	i
Medium hubs <sup>c</sup>	43	19	25	60-80	Under 15
Small hubs <sup>d</sup>	67	13	40	20	40
Nonhubs <sup>e</sup>	139	5	60	20	20
Other Commercial <sup>f</sup>	272	5	80	20	0
<b>General Aviation Airports</b>					
Relievers <sup>g</sup>	244	6	75	8-10	Over 17
Other General Aviation <sup>h</sup>	2,449	10	75-80	i	Under 25

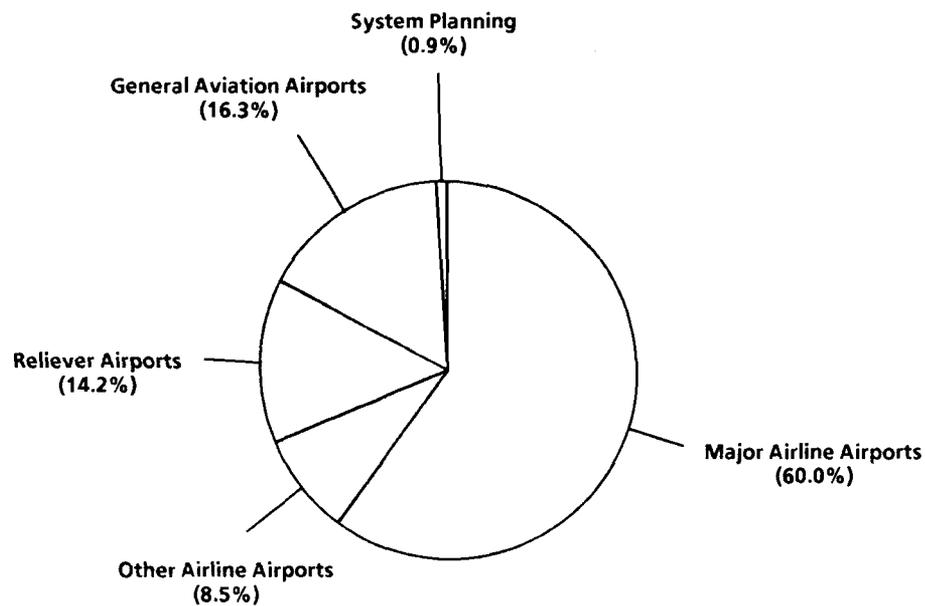
SOURCES: Congressional Budget Office, *Financing U.S. Airports in the 1980s* (April 1984); and Federal Aviation Administration, *National Plan of Integrated Airport Systems (NPIAS) 1986-1995* (November 1987).

- a. Includes airports classified by the FAA as in the National Plan of Integrated Airport Systems.
- b. Large hubs enplane 1 percent or more of national revenue passengers.
- c. Medium hubs enplane between 0.25 percent and 1 percent of national revenue passengers.
- d. Small hubs enplane between 0.05 percent and 0.25 percent of national revenue passengers.
- e. Nonhub airports enplane between 0.01 percent and 0.05 percent of national revenue passengers.
- f. Other commercial airports are all other airports that enplane more than 2,500 revenue passengers annually.
- g. Reliever airports are airports in metropolitan areas that are intended to reduce congestion at large commercial service airports by providing alternative landing areas. Most relievers handle only general aviation; some also handle commercial flights.
- h. Other general aviation airports are all other airports handling nonscheduled flights.
- i. Negligible.

ments at general aviation and reliever airports in cities with major hub airports have catered to the expansion in general aviation flying in those cities but have not markedly reduced the peaking in airline flights that causes the major delays at commercial airports.

Congestion results when more aircraft seek to land or take off than an airport can handle. At most airports, this excess demand is confined to peaks reflecting preferred travel times. Even high levels of use of airline airports by smaller aircraft in off-peak hours need not add to delays of airline aircraft or passengers. Since runways at most airports are crowded only during relatively short peaks, much of the nonscheduled flying that supplements the national system is as likely

Figure 6.  
Recipients of New Federal Airport Grants  
Approved From 1983 Through 1987



SOURCE: Congressional Budget Office, from Federal Aviation Administration data.

to operate from the airline airports as from the relievers. The 50 largest airline airports, for example, which handle nearly 80 percent of airline flights nationwide, also handle as many general aviation trips as the busiest reliever airports serving 21 cities. Federal aid for these so-called reliever airports is in many cases not coping with peak-period traffic overflows from main airports, but is supporting separate, local, demands for sport, recreation, and travel.

### The Air Traffic Control System

The air traffic control system sets the order in which aircraft take off and land at major airports and determines their speed and altitude in flight. While some delays and congestion may arise from bad weather and airline scheduling practices, the proper functioning of air traffic control is critical to avoiding long-term systematic congestion in air transportation. In assessing air traffic control, two conclusions emerge. First, modernization is overdue. Second, poor pricing of federal aviation services results in poor use of aviation infrastructure capacity.

Modernization. Updating the air traffic control system will approximately double its productivity, but will not necessarily add to FAA's capacity to relieve air traffic congestion.

Annual outlays for investment and research by FAA averaged \$300 million from 1971 to 1983, representing a steady decline in real terms. By the early 1980s, equipment breakdowns and outmoded traffic handling systems had reduced the capacity of the national airway system and were creating work overloads for controllers. During the controllers' strike protesting these conditions in 1981, three-quarters of the controllers were fired. For the next two years, air traffic control was able to function only by administratively limiting the flow of traffic into the 22 busiest airports. These restrictions were lifted in 1983. Inadequacies in the equipment and persistent shortages of controllers continue to hamper air traffic. The controller work force remains about 5 percent below prestrike levels. The FAA has plans to achieve minimum staffing that would provide full levels of performance by the end of 1988 and to hire former military controllers to ease the shortage.

In 1982, the Congress approved FAA's plan to automate and consolidate air traffic control. The National Airspace System (NAS) plan was projected to lead to productivity gains that would allow controllers to double or treble the flights they could handle. Mostly for technical reasons, the NAS plan is running about five years behind schedule (FAA has been directed to prepare a comprehensive plan for carrying out the NAS project).<sup>7</sup> FAA's latest schedule calls for completing modifications of the computer system that will help give warning of impending midair collisions involving uncontrolled traffic in the vicinity of major airports (if aircraft are fitted with altitude-reporting equipment) by 1991. Nevertheless, overall completion of major components is not projected before the late 1990s.

CBO's evaluation of the plan showed it to be a sound investment, with an expected rate of return--after taking into account a wide range of risks, including possible implementation delays and cost overruns--of about 14 percent.<sup>8</sup> But although the plan will eventually solve the problems of inadequate equipment and controller shortages, it will not necessarily add greatly to the capacity of air traffic control. Ninety percent of the benefits of the NAS plan lie in the productivity-related cost reductions it affords: FAA's cost in handling any given level of traffic will be lower by about 30 percent because of lower costs for staff and equipment maintenance. But the automated system will need to be expanded to provide extra capacity for growth in the volume of air traffic.

Pricing. The dedicated taxes paid by aviation users do not ration the use of air traffic control capacity, nor do they reflect the cost of providing services. No premium is charged to passengers on peak flights; they pay more in federal taxes only if their fares are higher than those for off-peak trips. Consequently, passengers who would be willing to pay a premium for peak services may be crowded out by others for whom off-peak flights would be suitable. Moreover, the burden a particular flight places on the air traffic control system is unrelated to the taxes its passengers pay. Passengers who pay the same fare will pay the same tax, regardless of the air traffic control services needed

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7. House Committee on Appropriations, *Department of Transportation and Related Agencies Appropriations Bill, 1989*, 100:2 (June 10, 1988).

8. Congressional Budget Office, *Improving the Air Traffic Control System: An Assessment of the National Airspace System Plan* (August 1983).

to complete their journeys safely. Finally, taxes paid per flight have not kept pace with traffic control costs. Salaries and other costs of providing federal services increased by 15 percent between 1983 and 1987, and controller workloads rose at about the same rate, but tax payments per flight for air carriers rose by only 5 percent.

## THE OUTLOOK

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Aviation in the 1990s will not resemble that of any previous decade. Deregulation of domestic airline services has altered every aspect of air transportation. For residents in most communities, airline travel is now less costly and more convenient than before, so it is reasonable to expect that traffic, and requests for airport expansion, will increase rapidly. While airline traffic has grown, general aviation has declined continuously, although growth in executive and business flying remains strong. Maintaining different airports for scheduled airlines and for nonscheduled business flying may become increasingly difficult. Airlines now base their networks around hub airports that provide flight connections between many origins and destinations. Hubbing helps to make better use of aircraft, and also provides a way of diffusing some airport congestion while improving air service at smaller cities. It has also made airport investment more risky and increased the peak loads on air traffic control.

### Traffic Growth and Airport Expansion

FAA foresees growth in passenger travel averaging between 4 percent and 5 percent a year over the next 10 years.<sup>9</sup> Flights using the national air traffic control system are expected to grow at an average rate of around 2.5 percent a year, reflecting both extra airline flights and greater use of avionics equipment (required of aircraft using controlled airspace) by air taxis and general aviation. Even faster growth is forecast for major hub airports serving Denver, St. Louis, Washing-

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9. Federal Aviation Administration, *FAA Aviation Forecasts, Fiscal Years 1987-1998* (February 1987).

ton, D.C., Phoenix, Philadelphia, Las Vegas, Charlotte, Orlando, Tampa, Salt Lake City, San Diego, and Memphis.

Traffic growth calls for expansion of airports. Overall, the National Plan of Integrated Airport Systems projects investment at airports of \$24 billion over the next 10 years, about half of it for capacity expansion at either existing or new airports (see Table 13). Eighty percent of the needs for expanding capacity are foreseen to be at commercial airports, and major expansion projects (costing \$20 million or more) during the 1990s are planned at airports serving 31 cities, for a total investment of nearly \$2.5 billion. This expansion follows more than a decade when major projects were severely limited by considerations of noise and land use. Only about 8 percent of planned airport investment is for reconstruction, and an additional 3 percent is for other projects aimed at maintaining existing airport conditions. Almost half of projected investment at general aviation and reliever airports would be aimed at bringing airports in these categories up to FAA standards.<sup>10</sup>

### General Aviation

Once thought to be closely tied to economic prosperity, general aviation has withered during the sustained economic expansion of the last six years. Sales of new general aviation aircraft have declined each year, and manufacturers' shipments are now only one-twelfth those of a decade ago. Two major manufacturers have suspended production of most piston-engined models. Since 1980, the number of private pilots has dropped by 10 percent, and the number learning to fly by 30 percent. Since 1980, hours flown on general aviation flights have fallen at an average annual rate of about 3 percent.

Most of the decline has been in personal flying. Business flying has continued its long-term growth of 2 percent a year, reflected in a 2 percent growth in general aviation flying in turbine-powered aircraft. Around one-third of all general aviation flying is now for business purposes, and is undertaken largely by the same groups who patronize

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10. Federal Aviation Administration, *National Plan of Integrated Airport Systems (NPIAS) 1986-1995*, Report of the Secretary of Transportation to Congress Pursuant to Public Law 97-248 (November 1987).

commercial airlines' business flights. The concentration on business travel, and the increasingly sophisticated aircraft and equipment employed, indicate that airport use by nonscheduled business flyers is likely to remain strong at airline airports while it is likely to weaken at reliever and general aviation airports that offer a lower standard of facilities and do not provide connections with airline services.

TABLE 13. PROJECTED DEVELOPMENT COSTS FOR THE AIRPORT SYSTEM, BY PROGRAM OBJECTIVE, 1986-1995  
(In billions of dollars)

Airport Service Level <sup>a</sup>	Maintain Existing Conditions		Achieve Recommended Standards		Relieve Congestion and Expand System			Total Investment
	Special Programs	Reconstruction	Upgrade for Growth	Upgrade for Current Users	Existing Airports	Airports for New Communities	New Airports for Existing Communities	
<b>Commercial Airports</b>								
Primary	0.3	1.2	2.1	2.8	7.1	0.1	3.3	17.0
Other	<u>0.1</u>	<u>0.2</u>	<u>0.3</u>	<u>0.3</u>	<u>0.2</u>	<u>b</u>	<u>0</u>	<u>1.2</u>
Subtotal	0.4	1.4	2.4	3.1	7.4	0.2	3.3	18.1
<b>General Aviation</b>								
Relievers	0.1	0.2	0.5	0.3	0.4	b	0.3	1.8
Other	<u>0.2</u>	<u>0.4</u>	<u>1.4</u>	<u>0.8</u>	<u>0.5</u>	<u>1.1</u>	<u>b</u>	<u>4.4</u>
Subtotal	<u>0.3</u>	<u>0.6</u>	<u>1.8</u>	<u>1.1</u>	<u>0.9</u>	<u>1.1</u>	<u>0.3</u>	<u>6.2</u>
Total, All Airports	0.7	2.0	4.3	4.2	8.3	1.3	3.7	24.3
Percent of Total Investment	3	8	18	17	34	5	15	100

SOURCE: Federal Aviation Administration, *National Plan of Integrated Airport Systems (NPIAS) 1986-1995* (November 1987).

a. See Table 12 for a description of the airport categories.

b. Less than \$50 million.