

How this new phase in the evolution process would take place is hard to determine, particularly in the midst of a recession, which makes the situation look worse perhaps than it actually is. Compounding the problem is the level of investment that the major airlines have made in their integrated partners to rationalize their fleets. Divestiture has a high price. Who would buy these airlines at a price which would even come close to covering the investment of the major airline? The panel agreed that the model for regional airline partnerships is the Delta Air Lines/Delta Connection program. This program provides the regional with the identity of the major, and through 20-percent ownership by Delta, the stability of a relationship with a major airline. Delta enjoys all of the benefits of a regional partner, but at virtually no cost; and its ownership position ensures a limited level of control.

Regional Aircraft Manufacturers

The situation worse for the regional aircraft manufacturing sector, where there is a significant amount of overcapacity. The economic environment is forcing the issue. Partnerships and consolidations now under consideration by several regional aircraft manufacturers could reshape the industry. The logical outcome will be fewer competitive manufacturers and higher prices which will result in lower potential volume.

There is a close relationship between the success of regional airlines and regional aircraft manufacturers. The owned regional airlines, supported by their major partners, have been negotiating aircraft purchases at unprofitable prices for the manufacturers due to the competitive environment. These low-priced assets have allowed the airlines to expand at a rate and cost that would not otherwise have been possible. A change in this scenario, one which raises unit price, may result in reduced demand for regional aircraft.

The Outlook

Despite these problems and issues, the outlook is relatively bright. Regional airlines are, and will continue to be, an economical alternative to large carrier service. This has been shown in the past through the large number of passenger transfers between regional and major carriers. The volume of transfers is expected to increase as the major airlines retire small jets and shift service on routes formerly served by these aircraft to regional partners. The transfers may increase even more rapidly through the use of innovative regional aircraft designed to exploit new short-haul markets.

The major uncertainty remains the effect of consolidation, which could result in a more stable and perhaps profitable environment for regional and major airlines alike, as well as for aircraft manufacturers and equipment suppliers.

INTERNATIONAL AVIATION

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FUTURE AVIATION ACTIVITIES INTERNATIONAL AVIATION PANEL

INTRODUCTION

The panel chose to accept Dr. Behravesh's forecast of 5 to 8 percent average annual growth in international air travel. Rather than debate the accuracy of this generally

accepted growth rate, the panel focused attention on the ability of international airport and airspace systems to accommodate growth at this pace. If problems are already apparent in Europe and Asia, what must be done (or what issues must be resolved) to accept the doubling of traffic in the 10 years (more or less) implied by the forecast?

The discussion of the ability of airport and air traffic infrastructure to respond to the forecast growth concentrated on three topics:

- Dimensions of the congestion problem
- Key issues to be managed
- Selected influences on demand.

DIMENSIONS OF THE CONGESTION PROBLEM

Europe

Congestion at Europe's airports (measured by flights delayed over 15 minutes) has risen sharply since the mid-1980s (Figure 1). Currently, approximately 25 percent of all flights are delayed by 15 or more minutes. The cost and disruptions to passengers and airlines are significant.

These delays arise from a variety of reasons, including inadequate air traffic control (ATC) system capacity, antiquated ATC practices, and cost-saving operational responses to these problems (such as gate holds, which increase gate occupancy times). If nothing is done, 11 of Europe's 27 major airports (large hubs in U.S. jargon) will be capacity constrained by 1995, increasing to 16 by 2000. At the same time, the forecast traffic growth could lead to a fourfold increase in congested airway intersections by 2000. Well before then, possibly as early as 1995, Europe's ATC system will exhibit even more serious congestion effects than today if nothing is done to improve it.

Fortunately, parts of this problem have attracted political attention and received remedial action. The European Civil Aviation Conference (ECAC), made up of the transport ministers of 22 states, has endorsed a plan, "Strategies for the 1990s", designed to harmonize the disparate national ATC systems and thus improve capacity. ECAC has also endorsed an airway restructuring program that will lead to further capacity increases.

Europe's main long-term problem is on the ground; only one new airport (Munich) is under construction, and only two others are even being discussed (Spata in Athens and Oslo). Many airports can increase capacity through improved operating efficiencies (Table 1), but several major urban areas (e.g., London and Frankfurt) will still be short of capacity. Efforts must begin now on the 10-year process for new runways and/or airports to serve these regions.

Asia

In a way, capacity problems in Asia are almost the reverse of those in Europe. In recognition of the high growth rates and the national importance of civil aviation, 11 new airports or major expansion projects are under way. However, airspace problems, which require multinational coordination to resolve, are prevalent. North Pacific routes are considered saturated, as are the routes over the South China Sea where aircraft are forced on a single route between the Hong Kong/Taiwan region and the Singapore/Australia region. Routes crossing the India/Pakistan border are likewise inadequate for the flow from Europe to the southern Asia/Pacific region.

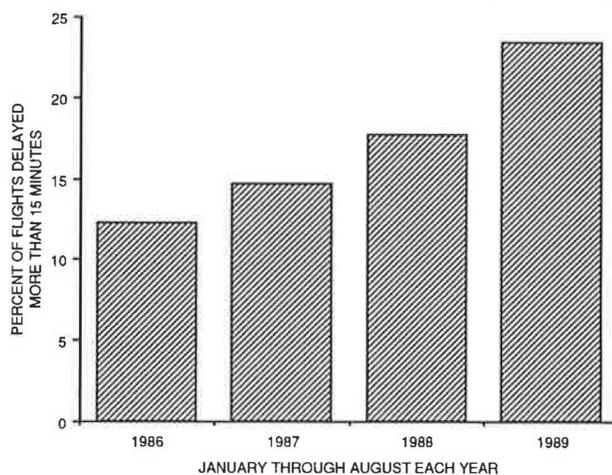


FIGURE 1 The proportion of delayed flights in Europe.

TABLE 1 POSSIBLE CAPACITY ENHANCEMENTS THROUGH IMPROVED UTILIZATION

Single Runway		Parallel Runways		Converging or Intersecting Runways	
Airport	Mvts/hr	Airport	Mvts/hr	Airport	Mvts/hr
London-Gatwick	41	London-Heathrow	72	Zurich	60
Manchester	39	Munich 2*	72	Stockholm	57
Düsseldorf	35	Paris-CDG	72	Istanbul	40
Geneva	35	Amsterdam	70	Hamburg	36
Munich-Riem	34	Paris-Orly†	66	Vienna	35
Milan-Linate	32	Frankfurt‡	60	Madrid	30
Athens	30	Copenhagen	60	Barcelona	28
Marseille	28	Rome	50	Dublin	25
London-Stansted	20	Brussels†	45		
		Milan-Malpensa	30		
		Palma de Mallorca	30		

* Opens 1992

† Near-parallel runways.

‡ Frankfurt can schedule 64 movements per hour in a single hour but only 120 movements per hour in any two consecutive hours.

If Soviet airspace and airports are opened, several benefits are possible. More northerly tracks over the north Pacific through Soviet airspace would enable users to avoid the jetstream and shorten distance by 200 or more nautical miles. The combined effect could be as much as a 1-hour flying time reduction. Soviet airports, such as Vladivostok, could provide alternatives to congested Narita for refueling stops.

A conference of Asian Transport Ministers is being sought by the International Air Transport Association and other interested parties for spring 1992. It is hoped that such a meeting will lead to a committed search for solutions to airway problems.

Latin America

The problems through Central and South America are not those of infrastructure availability but those of inefficient and, at times unsafe, operational practices. Improvements here can be sought through improving controller skill levels.

KEY ISSUES TO BE MANAGED TO MAINTAIN AND EXPAND AVIATION INFRASTRUCTURE

The possible solutions are technological, financial, environmental, and institutional. Prospects in each area are quite distinct.

Technological

No technological barriers exist to resolving any of the airspace problems -- the necessary technology is available virtually "off-the-shelf." Air traffic management over oceanic regions (and Russia east of the Urals) can be provided by the proposed Future Air Navigation Systems (FANS) being discussed by the International Civil Aviation Organization (ICAO). FANS provides satellite-based navigation, surveillance, and communication using the U.S. Global Positioning System (GPS) or Soviet Global Orbiting Navigation Satellite System (GLONASS). FANS has institutional problems that are tied to ICAO; those will be discussed shortly.

Automated dependent surveillance and automated en-route ATC enhancements could expand airway capacities. In terminal areas, runway incursion detection systems and independent parallel operations like those being demonstrated at Raleigh-Durham could enhance safety and capacity.

Environmental

Environmental concerns include noise, emissions, waste, and toxic materials from airport operations. The need for aviation interests to establish a dialog with environmental interest groups, to replace the present rhetoric, was discussed. Little hope was expressed for the ability to establish a dialog with more radical opponents; however, local, issue-oriented environmentalists ("NIMBY" -- Not In My Back Yard) and concerned, rational environmentalists could be engaged in productive evaluations of airport benefits (employment) and cost (noise, emission) trade-offs.

Computer models can provide analyses to support discussion of environmental issues. Although their absolute accuracy is doubtful, they could provide helpful insights if the models tested benefits and costs of alternative developments with a range of weightings (reflecting the values of diverse community groups such as housewives and businesses). The well-accepted use of risk analysis techniques in Vancouver was cited as an example of a quantitative approach to evaluating the inevitable trade-offs.

Financial

In 10 years, it is entirely possible that financial problems will be as prevalent as environmental problems are today. The need for tens of billions of dollars for infrastructure enhancements will compete in constrained capital markets with the hundreds of billions of dollars required for new aircraft. The airport and ATC expenditures needed to accommodate the forecast growth are likely to be stalled (as they frequently have been) if government sources are relied upon. Public-private cooperation will be needed. Recent revenue bond funding for long-delayed radars in Greece is an example of how such cooperation can provide necessary enhancements.

Institutional

The institutional dimension involves international, multinational, national, and labor elements. Concern was expressed about ICAO's ability to sustain its role as the international standard-setting body. While the panel generally agreed on the need for international standards and a body to focus such efforts, examples of ICAO's recent failures were numerous. After years of effort by an ICAO planning group, action on Europe's ATC problems did not gain momentum until ECAC took action. The United States FAA and Europe's Joint Aviation Authority (JAA) have established cooperative measures that make ICAO almost irrelevant for establishing certification standards. This cooperation is beginning to extend into aircraft maintenance and operations standard-setting.

It appears that regional bodies, (such as ECAC) and national civil aviation organizations (such as the U.S. FAA) have a greater ability to implement improvements. The harmonization and route restructuring endorsed by ECAC was previously discussed, while the replication of the Raleigh-Durham high-scan-rate radar system as a way to increase capacity on closely spaced parallel runways at other locations in the United States is expected. While it is gratifying to find governments implementing capacity enhancements, the possible elimination of international planning and standard-setting is worrisome.

Labor problems include union relations and personnel recruitment. Greater flexibility in manpower scheduling without the civil service restrictions that bind many ATC workforces could enhance utilization. Increasing controller recruitment would also help. For example, the U.K. and French air traffic services each hires approximately 50 to 100 controllers annually -- as compared with over 2,000 by the U.S. FAA.

Institutional and political changes do not occur on their own, and the panel was encouraged to note the formation of the Air Transport Action Group (ATAG) in Europe by IATA and other parties such as consumer groups, chambers of commerce, and travel organizations that benefit from an efficient aviation system. ATAG enables organizations with an interest in resolving congestion problems to effectively coordinate political action.

SELECTED INFLUENCES ON DEMAND

Although the panel accepted the demand forecasts as representative of likely growth, they identified four specific influences that could shape the future.

International Hub-Bypass Service

The potential growth of nonhub-nonhub (or small hub-small hub) transoceanic services could contribute to reducing large hub congestion. However, travel survey data suggest that such service probably would not obtain the traffic volume necessary to operate economically. It appears that a large hub is needed at one or the other end of the trip. While this kind of service has grown significantly, future opportunities for reducing traffic demand at large hubs with bypass service are not likely to be so dramatic.

Teleconferencing

Ten years ago, aviation forecasters were anticipating a mild reduction in air travel as a result of teleconferencing in the 10 to 20-year future. We are continuing to await its impact. The panel did not expect teleconferencing to have a significant influence during the 1990s.

High-Speed Rail

Possible reductions in air travel demand arising from high-speed rail service are likely in Europe (and in a few selected domestic city pairs in Asia). The scale of this reduction is expected to be slight systemwide -- causing

a 4- to 5-percent reduction over 20 years in Europe according to two studies. While high-speed rail service may reduce demand by over 50 percent on selected routes, the highly dispersed pattern of European air travel is such that the systemwide impact of high-speed rail is expected to be almost negligible. Indeed, the argument was advanced that the planned installation of high-speed rail stations in the lower level of several European air terminals could help expand feed to airports.

Air Express Growth

In the United States, over the past decade air express has grown from a small activity to a revenue-ton mile volume almost equal to that of air cargo. If forecast growth rates of air express (as high as 26 percent average annual growth rate in the Asia/Pacific region) are achieved, the daytime operations of these dedicated freighter aircraft win increase demand on airport (runway and ramp) capacity over and above the already high passenger growth forecasts.

CONCLUSIONS

The panel viewed the prospects for sustained high international air travel demand as excellent. Prospects for timely provision of the airport and airspace infrastructure to support this growth are far less certain. Sustained action by the aviation community and allied interests will be required to obtain the necessary investments. For the decade of the 1990s, the panel was cautiously optimistic.