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New Policy Approaches to International Air Transport: Main Issues and Summary of the Discussions

by

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1. Introduction

The strategic importance of efficient air transport services for national competitiveness -- and the economy as a whole -- has grown significantly over the years. More than a billion passengers go by air every year, as do over 20 million tonnes of freight. Air transport plays a central role in major industries and contributes significantly to regional development. It will occupy an even more important place in the future as tourism continues to grow, world production moves to higher-value-added output, and economic activities become increasingly integrated worldwide.

However, troubled times lie ahead for the international air transport industry. To begin with, it faces major difficulties in its more immediate operational environment in the 1990s. Serious problems are posed by the growing congestion of airport facilities and airspace. Traffic is often heavily concentrated on a limited number of gateway airports, while secondary airports are underutilised. Alleviating congestion in the air calls for substantial investments and close international co-operation, particularly in Europe. Moreover, infrastructure bottlenecks are increasingly exacerbated by environmental constraints.

Problems have also arisen within the industry itself. The competitive climate has become harsher. Recent losses have been severe and widespread, forcing carriers to undertake major restructuring and to seek international strategic alliances. Moreover, doubts hang over the industry's ability to finance the 5 000 or so new aircraft required over the next decade to replace obsolete fleets and meet new air travel demand.

Despite a number of important steps taken in the last few years towards liberalisation of the industry, international competition is still distorted so that carriers are unable to fully exploit potential network economies. These distortions result notably from the restrictions under bilateral agreements on certain traffic rights and national rules limiting the foreign ownership of airlines; but they also stem from differences among countries in the scope of private and public ownership, as well as in taxes, depreciation rules, subsidies and bankruptcy laws.

However, further liberalisation of international air transport appears likely as it gradually loses its status as an industry requiring special treatment and governments disengage themselves from direct involvement in the provision of air services. More weight will be given to broad economic considerations, including the interests of users, in the formulation of public policies. Questions arise, however, with regard to the route to be adopted for pursuing this liberalisation effort.

This paper is intended to provide an overview of some of the issues which will be confronting both the industry and governments in the years ahead, and to identify areas meriting further analysis. It draws on the contributions presented at the meeting and on the ensuing discussion.

2. Historical perspective and current status of the industry

Over the last few decades, international air transport has played a key role in the development of the world economy, stimulating exchanges between countries and facilitating international economic relations. It has allowed a number of industries to expand their geographical markets and to introduce innovative just-in-time distribution techniques. The globalisation of production and sales structures has contributed to an improved use of resources worldwide. Moreover, the expansion of tourism, apart from widening cultural opportunities for millions of people, has also lead to greater economic prosperity in many previously underdeveloped regions.

Today, the supply of international air transport is provided by some 300 airlines which directly employ more than 3 million people and serve 14 000 airports with a total fleet of about 15 000 aircraft. In 1990, the total number of passengers (on both scheduled and charter flights) amounted to more than 1.25 billion, while the 22 million tonnes of freight transported by air accounted for almost a quarter of the value of the world's manufactured exports.

The industry's current situation in fact reflects decades of rapid expansion. Since the advent of commercial jet transportation, the world air travel market has grown significantly faster than the world economy, although it has gradually matured over the last three decades. Following particularly rapid growth in the 60s and early 70s (14.4 per cent per annum on average), world air travel grew significantly more slowly after the first oil crisis, but reached nevertheless an average growth rate of 6-7 per cent per annum in the 80s.

The increase in total air traffic (domestic and international) is mirrored in the overall growth performance of its two main components: passenger traffic and freight traffic. Over the last decade, these increased on average by 5.7 and 7.3 per cent per annum, respectively. The most dynamic element in this development was the international component, which recorded annual average growth rates roughly 1 to 1.5 percentage points higher than those for overall traffic.

While US carriers have the biggest share of overall traffic -- mainly because the US domestic market is by far the largest single air market -- European airlines still retain the lion's share of both international passenger and freight traffic.

This is partly due, of course, to the relatively large number of countries on the European continent and the restrictions which the existing international regulatory regime imposes on the operations of carriers outside their national borders. However, European carriers have been losing ground over the last decade to US carriers with regard to international passenger traffic, and to Asia-Pacific carriers in respect of both international passenger and freight traffic.

Despite years of unbroken traffic growth, the industry has not produced healthy profit margins. Over the 80s, operating results amounted to only 2.7 per cent of aggregate operating revenues, while aggregate net results (which also take into account non-operating items and income tax) were even less impressive, at only 0.9 per cent of operating revenues. The main reason is that yields (measured in revenue per passenger-kilometre and per tonne-kilometre received by airlines) have not been high enough to cover costs. During the 1960-90 period, yields declined by 2.2 per cent per annum for passengers and by 3.4 per cent per annum for freight. During the same period, unit costs (operating cost per available kilometre) declined in real terms at an average rate of only 1.9 per cent per annum.

The evolution of the industry over the past few decades has been greatly influenced by the failure of participating states to reach agreement on a multilateral international air transport charter at the 1944 Chicago Convention. The bilateral regime which emerged in the aftermath has resulted in the establishment of a system of compartmentalised sub-markets involving national flag-carriers. In this regulatory environment, competition has been stifled not only by restricting entry in each bilateral market to a limited number of designated carriers, but also by constraining pricing freedom through the frequent imposition of market- and revenue-sharing arrangements. While the regime has been very stable, the resulting market fragmentation has acted as an increasingly binding constraint on the ability of airlines to take full advantage of network economies.

However, some degree of flexibility has been introduced into the regulatory regime over the last fifteen years or so. On the passenger front, charters have taken advantage of loopholes in the regulation to offer cheap leisure travel fares, notably in Europe. Moreover, cargo pricing in major markets has been substantially deregulated, reflecting the availability of ample bellyhold cargo capacity, the scope for routing competition, and the small number and sophistication of international air cargo shippers. In addition, several bilateral agreements have been liberalised and a number of regional plurilateral agreements have been signed in recent years.

The move taken by many governments towards less economic control of airlines and greater reliance on market forces has resulted in the privatisation of government-owned airlines and the emergence of new airlines. At the same time, the traditional distinction between domestic and international carriers has become increasingly blurred as a growing number of the former have begun international service and some international airlines have started domestic operations. Liberalisation of international air traffic has also been reflected in changes in ownership structure, as a growing number of carriers have acquired equity participation in foreign airlines.

Liberalisation has also brought about significant changes in the operation of carriers. Particularly interesting in this regard is the development of hub-and-spoke networks. This allows carriers to combine passengers for various destinations on flights bound for the hub, and to combine passengers from various points of origin on flights outbound from the hub. By adopting this network configuration, US carriers have been able to compete more effectively by offering more frequent flights to more destinations, using larger and more economical aircraft. Hubbing also allows for a more cost-effective use of ground facilities.

Hubbing has also proved attractive to carriers on the revenue side. First, it offers greater scope for price discrimination, permitting airlines to capture a greater share of the consumer surplus. Secondly, hub dominance combined with the sophisticated use of computerised reservation systems (CRS) and various marketing schemes such as frequent flyer programmes (FFPs) provides a way for established carriers to erect barriers to entry, enabling them effectively to fend off potential new entrants. The net result has been the emergence in the liberalised US market of a relatively stable industry structure characterised by the dominance of a few mega-carriers.

3. Demand prospects

Most experts agree that over the next two decades world air travel demand should increase by 5 to 6 per cent per year on average, although its geographical spread will be very uneven. Growth forecasts are relatively high (8-9 per cent per annum) for traffic within Asia and on routes linking Asia with North America and Europe, and fairly low (around 4 per cent per annum) in the more mature North American, transatlantic and European markets. However, despite the apparent consensus of experts, such estimates should be considered with caution since they are largely based on the extrapolation of past trends. In fact, many factors can be expected to have a bearing on future demand.

While at the aggregate level future increases in air travel demand are highly dependent on growth prospects for the world economy, its major components (business, leisure and cargo) respond to somewhat different causal factors. For instance, growth in the demand for business-related air travel will be particularly sensitive to the growth of those activities which rely most on face-to-face personal contact (i.e. managerial, administrative, professional, technical and sales occupations). Growth in leisure and personal business travel will depend by and large on increases in per capita incomes and increases in leisure time. The demand for air cargo meanwhile will depend largely on the growth in international exchanges. For instance, the International Civil Aviation Organization (ICAO) estimates that a 1 per cent increase in real world exports should cause a 1.5 per cent increase in the demand for air cargo expressed in freight tonne-kilometre (FTK).

Given the high sensitivity of air travel demand to the level of economic activity, relatively small differences in overall economic growth could have considerable impact not only on the level and composition of demand, but also on its price sensitivity. Slower growth resulting in stagnating disposable income would adversely affect the demand for leisure travel primarily, while business travellers

faced with tighter budgets would try to take advantage of the cheaper fares generally offered to the leisure traveller. By contrast, if the world economy grows faster than expected, the greatest effect should be on leisure travel, while both leisure and business travel would become less price-sensitive.

Another factor which may have an important impact on the future demand for air transport in some markets is their relative degree of saturation. On the basis of per capita travel measured in RPMs (revenue per passenger miles), North America appears to be the most mature market, with 1 740 RPMs per capita in 1990 compared to 475 in Europe and only 75 in the Asia-Pacific region. Consequently, the US market may be closer to saturation. By contrast, the Asia-Pacific market still appears to have a potential for rapid growth.

However, what actually constitutes saturation may change over time in response to economic, social and demographic developments, resulting in an increase in the absorptive capacity of particular markets and a postponement of the saturation process, even in the most advanced industrialised countries. For instance, the growing proportion of relatively well-to-do and healthy retired workers in these countries should contribute to the increased demand for leisure-related air travel. Moreover, a decline in the average family size should foster the demand for air travel since intercity trips made by smaller travelling parties are more likely to be made by air than by alternative modes of transportation. Finally, growing economic integration in North America and Europe should have a positive effect on regional air travel.

Trend forecasts implicitly assume that the liberalisation of international air transport will continue in the future at the same rate as in the past. However, the process could in fact accelerate in the future, causing sizeable reductions in fares (notably for leisure travellers) and increases in the frequency of flights in some markets (particularly in Europe). As suggested by the US experience, the traffic response to rapid liberalisation could be quite strong, assuming that congestion problems both in the air and on the ground could be overcome without significant increases in costs.

Increased inter-modal competition resulting from improved highways and -- more importantly -- from the continuing development of high-speed trains (not only in Europe and Japan, but also in the United States) could also have a bearing on the future demand for air transport. Diversion of traffic from congested facilities may occur when the total air trip time (from actual origin to actual destination) is equal to total travel time by train or by road. For instance, on distances up to 400 kilometres, high-speed trains offer as high or higher door-to-door speed than air transport. The impact of the Channel Tunnel on the Paris-London route -- one of the busiest air routes in the world -- could be particularly significant in this regard. Even in the United States, where air travel is the most developed, high-speed trains could take 40 million travellers out of the skies and off the highways annually. In addition to the "Texas Triangle" TGV line currently under development between Houston, Dallas and San Antonio, prospects for high-speed trains appear particularly good for the San Francisco-Los Angeles route and the northeast corridor from Boston to Washington.

Apart from the high energy efficiency of trains, a major advantage of rail over air travel -- and one which is likely to achieve even greater prominence in the future -- is the fact that rail terminals can handle a much larger number of passengers over a smaller space than airports, while at the same time generating much less noise pollution. For instance, the Gare Saint-Lazare in Paris handles 150 million passengers per year on a fraction of the space used by the busiest airport in the world, O'Hare in Chicago, with "only" 60 million passengers a year. This is leading a number of experts, including those in air transport, to advocate the building of high-speed rail links for short distances instead of new airports. The diversion of traffic from air to land transport may in fact benefit airlines by allowing jet operation to be reduced on some loss-generating short-haul feeder routes and to concentrate instead on longer, more profitable routes.

4. The operational environment

Over and above the uncertainty of demand prospects, the industry faces major difficulties in its more immediate economic and operational environment. First, there is growing congestion on the ground: the existing capacity of many airports is overstretched and airport access facilities are frequently inadequate. Secondly, there is increasing congestion in the air: existing air traffic control systems are reaching their operational limits. Thirdly, growing concerns about the environmental impact of air transport (notably noise pollution around airports, excessive use of valuable land and aircraft engine emissions) are fuelling opposition to the expansion of existing facilities and the development of new ones. The situation is likely to get worse over the next two decades, since 50 to 60 per cent of the growth in world air traffic will need to be accommodated through an increased number of flights.

The problem is particularly serious with regard to airport facilities, since few airports were built during the past decade or are under construction in the most congested areas. Moreover, the limits to terminal and runway extension are being reached at some major airports. In the United States, the Federal Aviation Administration (FAA) estimates that delays at airports currently represent the effective use of 500 planes for a full year. Today, 21 airports experience capacity constraints, notably New York (JFK), Boston, Atlanta, Chicago, Denver, San Francisco and Los Angeles. By 1997 the situation could get worse, with 33 airports experiencing serious flight delays. Taking a longer time perspective, it is estimated that by 2010 US domestic traffic will increase by 240 per cent, while the flight capacity of the top 50 airports will increase by only 20 per cent.

In Europe, prospects are even worse. Of the three major airports (London, Frankfurt and Paris), only Paris has excess capacity. No solution is seen for Frankfurt's capacity shortfall. In London, passenger growth will exceed terminal capacity by the mid-1990s and aircraft movement growth will exceed runway capacity by 2004. By 2010, 13 of the 27 airports that represent the major traffic centres of Europe will have run into capacity constraints, even with potential enhancement. In Asia, airport congestion could also be critical in five cities. Tokyo's Narita airport is operating near full capacity and its extension is likely to face severe political opposition, particularly on environmental grounds. Osaka operates at its limit during peak hours, and the new airport is not scheduled to open before 1994.

Hong Kong's new airport, to be inaugurated in 1997, faces serious funding problems. Sydney and Bangkok also need new facilities, especially increased aircraft parking capacity.

The land-intensive character of airports is a serious barrier to the provision of extra runway capacity and, to a lesser extent, terminal capacity. In addition to efforts designed to extend the capacity of airport facilities, measures to assure a more efficient use of existing capacity could also contribute to alleviating congestion. These could include in particular a pricing structure which encourages the use of larger planes and a more even slotting of flights during the day. In air terminals, the progressive introduction of machine-readable travel documents and the general streamlining of procedures should contribute to improve throughput.

Bilateral restrictions may also have contributed to the congestion problem by concentrating traffic in a limited number of gateway airports (e.g. Heathrow) while secondary airports (e.g. Manchester) are under-utilised. However, liberalisation is likely to result in a significant increase in traffic, which is bound to tax all airports as carriers seek to compete not only on price but on flight frequency and as the use of hub-and-spoke networks becomes more widespread.

Attention also needs to be devoted to improving airport access and to reducing travel time to and from airports. Access-egress time amounts to 60 per cent of the total door-to-door trip time on short flights (e.g. London-Paris), and may still represent as much as one-third of total travel time on distances of 1 000 kilometres (e.g. London-Copenhagen). To the extent that road access to airports is becoming increasingly congested, higher priority will need to be accorded the development of rail links from city centres to airports. Also, improved intercity rail connections to airports can make a major contribution to shortening travel time and alleviating airport and airspace congestion.

Air traffic increase will require costly expansion of airport capacity and access facilities, as well as major improvements in air control operations. For instance, the ICAO estimates that \$250-350 billion will have to be spent on airports and {en route} facilities over the next twenty years. Europe, North America and the Asia-Pacific region are expected to account for between 75 and 80 per cent of these requirements. It is to be noted, however, that these estimates may be conservative to the extent that they do not take into account either a more dynamic growth of air transport demand -- due for instance to faster liberalisation of international air transport regulation -- or possible future action aimed at reducing or eliminating adverse environmental consequences of air transport.

The financing of facility expansion represents a major challenge to governments and the industry alike. While part of this financing may come from the public purse, it is likely that the larger share will have to be financed by carriers and the travelling public through higher airport taxes and user fees. Financial pressures could accelerate the trend towards the creation of autonomous authorities for the management of airports. Effectively managed authorities (whether privatised or not) with their own accounts and budget would provide for greater financial

transparency. This, together with the closer control they exercise on costs and revenues, should inspire greater confidence in prospective lenders and facilitate financing.

Congestion problems will also arise in the air. Many air traffic control systems are ageing and large investment expenditures are needed to bring new technology into the system. Alleviating air congestion is particularly challenging in Europe, where sovereignty concerns have been a major obstacle to the development of efficient Europe-wide air traffic control. Currently, 42 control centres and 22 different control systems operate independently. The problem is further complicated by the desire of newly independent countries in central and eastern Europe to create their own national air traffic control (ATC) systems.

However, there has been progress recently. Most EC member countries now recognise the need to move toward a single European control architecture. This should accelerate progress towards a harmonization of procedures and equipment, and a rerouting and resectorisation of airspace designed to minimise crossing traffic. Such co-operative efforts could eventually lead to the operation of a single agency responsible for air traffic control in Europe. In the United States, the FAA hopes to improve ATC and reduce costs thanks to the implementation of a \$25 billion automation plan which, within ten to fifteen years, will allow air controllers to handle simultaneously up to 50 aircraft, compared to only 20 in 1990. In addition, a shift to larger aircraft and a displacement of general aviation (GA) and military flights are considered imperative to accommodate future increases in commercial demand.

Technological developments which will contribute to alleviate congestion in the air include the use of a network of navigation and communications satellites to replace existing line-of-sight systems and provide more accurate navigation, more comprehensive surveillance and greatly improved communications. Aircraft will have to rely more on satellite and inboard facilities (e.g. GPS) than on ground control. Other technical procedures such as revisions to separation criteria can improve the flow of air traffic and reduce congestion delays. The development of sophisticated expert systems to compute cruise and descent profile could also greatly contribute to the improvement of airport throughput capacity.

The problems of infrastructure bottlenecks will be compounded by environmental constraints, notably with regard to engine noise and gas emissions. Concerns about noise will create growing pressures for the imposition and strict enforcement of flight curfews. It will also fuel community opposition to airport development. The gradual introduction of quieter aircraft, as states phase in operating restrictions on older, noisier aircraft between 1995 and 2002, should contribute to reduce noise levels. However, this will be offset by the growing number of aircraft movements required to meet increased traffic demand. On balance, the overall noise level could decline in general terms over the next decade but may eventually rise again afterwards.

Aircraft engine emissions are now becoming of greater concern than in the past as a result of new information that they may contribute to the greenhouse effect and the depletion of the ozone layer. In particular, the emission of nitrogen oxides

(NO_x) could cause ozone depletion in the upper atmosphere, and has been linked to acid rain and smog in the lower atmosphere. While aviation accounts for only a minute fraction of NO_x emissions (less than 1 per cent in Europe), environmental concerns arise from the fact that it is the only human cause of pollution in the upper atmosphere.

5. The financial viability of the industry

Concerns have been raised about the future financial viability of the industry: notwithstanding the expected increase in demand for air travel services and the considerable opportunities for cost-saving in a number of areas, significant increases in capital costs are anticipated from substantial aircraft acquisitions, over the next two decades, which could easily offset any improvements in carriers' revenue situation.

On the cost side, progress will continue to be made on many fronts. First, significant technology-related efficiency gains from improvements in the area of aerodynamics, airframe structure, engines and electronics are expected. As a result, the global world fleet should be 40 per cent more fuel-efficient in 2009 than in 1989. This would contribute to reducing not only fuel costs but also the vulnerability of airlines to large variations in the price of fuel. Moreover, improvement in load factors and aeroplane utilisation, and an increase in the average size of planes, should also boost efficiency. This should enable airlines to operate with 37 per cent fewer aeroplanes in 2005 than if they had maintained 1990 load factors, utilisation and aircraft size.

Cost-savings will also be achieved in other areas. This includes maintenance costs, as newer aircraft will require less attention than older ones. Cuts in labour costs will result from the more widespread use of information technology, notably in such areas as customer services, operational controls and yield management. Crew costs should also decline as the use of two-person cockpit crews becomes more frequent in the 90s.

While substantial, these gains are expected to be less important than in the past and could very well be offset by cost increases in other areas. In particular, most experts foresee significant increases in capital costs if carriers actually proceed with the substantial aircraft acquisitions expected over the next two decades. For instance, taking into account both the retirement of older aircraft and the capacity expansion required to meet air travel demand growth, Boeing estimates that nearly 12 000 planes will need to be delivered over the next two decades, at a total cost of \$857 billion (1992 dollars). Similar figures have been advanced by the ICAO (\$800 billion), which estimates that 11 000 commercial jet aircraft will be delivered to airlines and leasing companies over the 1991-2010 period. Some 40 per cent of the aircraft will be for operation by North American carriers, 25 per cent for European carriers and another 25 per cent for Asia-Pacific airlines. The ICAO further anticipates that 70 per cent of the acquisition will be to meet traffic growth and 30 per cent for replacement purposes.

Such an unprecedented financial effort is bound to raise capital costs and could have a detrimental effect on the financial position of some carriers. For example, the investment-related costs of US carriers (i.e. depreciation and amortization, leases, insurance) could grow by well over 4 per cent per annum in the 90s and beyond. In order to be able to absorb this increased cost while maintaining their debt/equity ratio at its current level (about 1.5), US carriers would need to achieve an operating margin profit (OMP) of 6 per cent after 1994. With a 4 per cent OMP -- a high figure by historical standards -- the debt/equity ratio could double to a record level of 3, which may not be financially sustainable.

In addition, the leasing company GPA has some doubts about the ability of carriers to finance the projected acquisitions of aircraft. It estimates that of the \$380 billion investment requirement over the 1992-2000 period, carriers will be able to finance only \$150 billion out of cash flow and new equity. Hence \$230 billion will have to be found from outside. While about \$25 billion could be financed out of new debt and \$90 billion by leasing companies, the \$115 billion balance will need to be covered by other forms of financing yet to be determined.

This has led some observers to consider the acquisition forecast above to be overly optimistic. Not only do carriers have insufficient financial capacity to acquire new aircraft on such a scale, they argue, but they will have strong incentives to slow the pace of capacity expansion in order to maintain load factors above the breakeven point. Moreover, it appears most likely that a number of financially vulnerable carriers will be forced to leave the industry. The resulting slow-down in capacity expansion should translate not only into higher load factors but also into lower future debt levels, contributing to an improved overall financial situation for surviving carriers.

Assuming that demand continues to expand as expected, slower capacity growth should also have a favourable effect on yields, and hence on the overall revenue position of surviving carriers. Over the next decade, such yields may indeed remain constant in real terms or even increase slightly. This is in contrast with the experience of the last twenty years, when yields actually declined by 2-2.5 per cent per annum on the average. Moreover, the disappearance of their weaker competitors should provide surviving carriers with more room to restructure their operations, expand their activities and seek the network economies required to operate effectively in a more competitive environment. As this restructuration process evolves further, mega-carrier development through merger, co-operation and consolidation could enable airlines better to control their fares, and hence their overall profitability.

Thus, on balance, whether the industry as a whole will be in a better financial position ten years from now than it is today remains an open question. It will very much depend on the way the constraints facing the industry are dealt with, how the regulatory regime evolves, how quickly carriers adjust to this new environment and what structural characteristics eventually emerge for the industry. While some carriers which have already adjusted to a more competitive environment may be able to reap handsome profits over the period, others are unlikely to show good returns, given their poor financial situation today and the painful adjustment they will have to undergo, while still others will have to leave the industry altogether.

It is likely that the larger American carriers that have survived the US deregulation process and benefit from a large domestic market, as well as some of the most efficient Asian carriers, will be in a good position to expand their share of international air traffic. On the other hand, European carriers, who currently hold the largest share of the international air travel market, could face substantial market share losses and will have to undergo painful restructuring. Once the adjustment process is completed, the financial situation of surviving carriers should be reasonably healthy.

6. Industry structure and regulation

While the progressive liberalisation of international air transport has already brought some changes in the structure of the industry, questions remain as to its future evolution if liberalisation were to proceed further. In this regard, it appears likely that the hub-and-spoke network configuration adopted by US carriers in the aftermath of deregulation in the US market could be increasingly extended at the international level.

While hubbing may not become widespread in markets where distances are relatively short (e.g. Europe), it appears particularly well suited for intercontinental travel (the fastest-growing segment of the international market), since it is on longer distances -- where the time cost of a stopover at the hub is relatively small compared to the total travel time -- that hubbing is most effective. However, the creation of hub-and-spoke networks at the international level will require significant restructuring of the international air transport industry, notably through expansion, consolidation, mergers, corporate alliances and code-sharing agreements, which in turn will lead eventually to the emergence of a relatively small number of dominant global carriers. This is likely to require the creation of transnational corporations, and to accelerate the privatisation of a growing number of carriers. It could also raise serious competition policy issues at the international level if international air transport markets indeed prove to be imperfectly contestable.

However, this evolution is likely to take some time, as several factors continue to distort competition and to prevent carriers from fully exploiting potential network economies. These include notably bilateral restrictions on 5th freedom rights, on cabotage and multinational ownership of airlines. Distortions also result from ownership differences across countries (private versus public), national differences in taxes, charges and depreciation rules, different approaches to bankruptcy laws (e.g. Chapter 11 in the United States) and the subsidisation of some carriers (e.g. in Europe). Moreover, different degrees of liberalisation in domestic markets result in significant imbalances between carriers at the international level, as illustrated by the relative competitive position of European {vis-à-vis} US carriers.

Further liberalisation appears to be likely nevertheless, as international air transport gradually loses its distinct status. In the past, the special regulatory treatment of the industry was largely predicated on the desire of governments to

maintain national flag-carriers to meet prestige, military and security-of-supply objectives and to have a protected source of invisible earnings. As the strategic importance of efficient international air services for overall national competitiveness becomes increasingly recognised, and as governments disengage themselves from direct involvement in the provision of air services, broad economic considerations -- including the interests of users -- favouring liberalisation are given increasing weight in the formulation of public policies. This evolution is illustrated by the growing interest given to air transport by government agencies other than those having direct responsibility for air transport. Particularly noteworthy in this regard is the growing scrutiny of carriers by competition authorities and the discussions on air transport services conducted in the context of the General Agreement on Trade in Services (GATS).

Further liberalisation need not necessarily involve a total overhaul of the regulatory framework but could perhaps be pursued, in the early stages at least, within the context of the existing regime. Indeed, bilaterals have a number of advantages for liberalisation. First, they represent a universally accepted method of negotiating air service agreements. Secondly, by restricting the benefits to specific partners, bilaterals permit negotiators to experiment with liberalisation on a limited basis, hence reducing the risks involved. Moreover, the bilateral route enables a country to develop a package of economic rights tailored to overcome the specific barriers to trade that impede its airlines' access to the foreign markets under consideration.

However, the regime also has a number of disadvantages. First, it limits the options open to negotiators, since the benefits and costs of liberalisation cannot be balanced over a range of markets and sectors. Moreover, since carrier designation plays a key role in the agreement, it is not clear how the system can cope with multinational ownership of airlines at the world level, although some progress has been made in this regard at the regional level. Another obstacle to liberalisation is the sheer number of bilaterals which would need to be amended in a co-ordinated manner, and the time and effort involved in the negotiation of each one.

On this latter score, the multilateral/plurilateral route to liberalisation may appear to represent a more attractive option. While a "big bang" approach involving a multilateral negotiation as ambitious as the Chicago Conference or the GATS is seen by many as unrealistic, it is nevertheless conceivable that progress towards multilateralism could be made on the basis of a more gradual approach. This could be achieved notably through the negotiation of plurilateral agreements either open to like-minded countries or restricted to a particular set of geographically contiguous states. However, problems could arise with regard to relations between those countries within and those outside the agreements. For example, countries within the agreements may be at odds with one another on the conditions under which other states can join the agreement, and may not accept to delegate their negotiation authority to the plurilateral entity (e.g. to the European Commission for the EC).

In practice, a combination of both the bilateral and multilateral approaches is likely. For instance, it is possible to envisage a scenario in which the pursuit of regional negotiations is successful both in North America and Europe, and leads

eventually to a liberal North America/Europe arrangement governing air transport both between and within the two regions. The gradual disengagement of governments from the provision of air transport services in other parts of the world could facilitate the internationalisation of carriers and lead governments to consider negotiation of air service agreements in a broader economic context. This might encourage phased multilateralism in which the North America/Europe agreement could become the nucleus to which other countries gradually adhere. For this purpose, the North America/Europe agreement would need to be an open agreement so as to allow others to join. This may call for the definition of standard multilateral terms to be inserted in bilaterals. Whatever approach is adopted, special arrangements would need to be made to reflect the particular situation of LDCs.

7. Concluding remarks

The air transport industry is going through a period of severe upheaval. Many airline companies are facing serious financial difficulties; deregulation has intensified competition; privatisation and the forging of international alliances between carriers are generating important changes in ownership structures; and expansion of the supply of air services is hampered by congestion on the ground and in the air. Given the complex interaction of the airline industry with so many other economic activities, and its strategic importance for international competitiveness, policy-makers need to understand better the wider economic implications of the changes sweeping the industry and to focus attention on the problems confronting it, so that policy responses provide a constructive basis from which the industry can tackle the difficult issues of the coming years.

At the national level, it is the industry itself and its operational environment that require more immediate attention. In dealing with the difficult financial situation of many national carriers, governments must reconsider how best to provide an economic and regulatory environment that is conducive to a restructuring of the industry -- which may involve consolidation, privatisation, the forging of corporate links with foreign carriers and the acceptance of larger shares of foreign capital in carriers' equity. Coping with the congestion on the ground may require first of all a critical examination and perhaps a modification of regulatory arrangements, so as to promote more effective use of existing facilities. If expansion of airport capacity nonetheless appears inevitable, decisions are required {inter alia} with regard to the financing of this expansion -- notably the institutional and legal status to be given to airports, the role to be played by public and private financial sources, and whether carriers themselves should participate in the development of new facilities. These reflections need to be set within a broader transportation policy framework which also takes into account complementarity and substitutability between air transport and other modes of travel such as high-speed trains, as well as the constraints imposed by environmental concerns.

The nature of air transport requires that the formulation of domestic measures take into account their international implications, and that they be complemented by new policy approaches at the international level. This includes harmonization of

equipment and procedures with regard to the management of airspace and the further development of the international rules of the game in which the industry operates. As any "big bang" solution to further liberalisation appears illusory, progress towards a more competitive international regulatory framework may be sought in practice through a combination of bilateral and multilateral agreements, probably with a strong element of bilateralism at the initial stage. However, multilateral elements would need to become more prominent as the process evolves. In any case, it will be necessary to deal with such problems as restrictions on 5th freedom rights, ownership and cabotage.

Given the overall economic importance of the air transport industry, its poor financial situation, the wide range of the problems it faces and the far-reaching implications which alternative policy approaches may have -- not only for the air transport industry itself but also for the rest of the economy -- participants at this OECD Forum for the Future conference have called for a broad policy-oriented analysis of the industry. In their view, such an analysis could help to provide policy-makers with a sound economic foundation for addressing the challenges that lie ahead.

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END-OF-TEXT