The Gains from the Liberalisation of Air Transport

A Review of Reform

Peter Forsyth*

1. Reforming Air Transport

Air transport is an industry that was identified by economists and policy-makers as a key area for reform. Until the late 1970s most air transport markets were tightly regulated. Outside North America, most airlines were government owned. There was a belief that performance could be improved significantly. Low load factors in the US suggested that regulation was not working well, and low productivity and high fares elsewhere suggested that large productivity gains were possible.

The obvious reforms were deregulation and privatisation. There was an expectation that deregulated airline markets would be very competitive, since studies had failed to find much evidence of scale economies. In small markets, the total numbers of competitors might not be large, but the threat of entry would keep costs and prices down. Analysis of existing regulatory structures pointed to weakened incentives to minimise costs and choose efficient price structures. Public ownership was also associated with weak incentives for cost minimisation, and some public airlines appeared to be chronically dependent on subsidies.

Over the past two decades, reform has been far-reaching. With European deregulation in 1997, most domestic and regional markets will have been opened up. There has been extensive liberalisation in many international markets, although the process has been less thorough, and some countries, especially in Asia, still impose restrictive policies. Privatisation has come later, but since British Airways was privatised many government airlines in Asia, South America, and British Commonwealth countries have been sold off.

Countries continue to liberalise and privatise, and there have been no strong movements towards re-regulation. The usual short-term effects of deregulation have been increased competition, new entry, lower fares, and a boom in air travel. Often, though not in all cases, airlines have faced lower profitability after deregulation, and entrants have found it difficult to survive. While most reforms have been regarded as successes, there is some questioning of just how well reform has worked.

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Two issues are perhaps to the fore. The first concerns how competitive deregulated markets are; few markets are as competitive as they were expected to be. This in turn poses the question of whether competition is sufficiently strong to ensure efficiency, in terms of keeping costs low, and prices close to cost. A second issue follows on from this; it concerns how large the gains from reform have been. At least for some markets, the gains from reform do not seem to have been as large as had been hoped. A related question, which cuts across both these issues, concerns how good economists' analyses of deregulated airline markets were; arguably they did not identify important aspects, and supposed rather more deterministic results than competitive markets usually deliver.

These issues are explored here. First, the expectations from reform are examined; this involves looking at the way airline markets were working prior to reform, what reform consisted of, and how it would affect them. Then the way competitive markets in air transport work is explored. Economists have shown a good deal of interest in analysing airline competition. Finally, the gains from reform are assessed. The available literature on this last issue is rather more sparse than that on how competition works.

2. The Expectations from Reform

The gains that were expected from reform depended on the pre-reform regulatory and ownership environment. This determined the nature of the problems present, and the nature of the reforms that could be implemented. Since regulation differed from market to market, the meaning of “deregulation” differed. For example, while both the US and Australian domestic markets were tightly regulated before deregulation, the nature of the regulation differed, and thus the problems it posed were different; in Australia there was not a problem of excessively low load factors and inefficient networks, as had characterised the US. Thus it is important to understand the starting points when considering the expected gains.

Airline regulation and ownership in domestic markets differed considerably, although there were some common strands. The US was rare in having an exclusively private system; some countries, such as the UK, Australia, and Canada had public and private domestic airlines. For many countries, such as New Zealand and several European countries, there were public monopolies.

The countries that allowed some competition were also the countries that had the most elaborate regulatory systems. US regulation involved price control, control over routes and networks, and entry controls (Douglas and Miller, 1974). Australia had entry prohibitions, more informal price control, but no control over networks, while the UK had price and (weak) entry controls, but less rigid control over routes served than the US (Forsyth, 1991). Countries that had public monopolies usually did not have very explicit price or route controls, but they did have controls over entry (invariably complete prohibitions).

There were important common features, however. Entry by new airlines was normally blockaded, and in most systems, entry by an existing airline onto a new route was difficult.
The extent of competition in terms of firm numbers on any route was limited, price competition was usually ruled out, and any competition that existed took the form of service competition. Exceptions existed; for example, in parts of Europe there was a large and competitive charter industry, which dominated leisure travel. Airlines were either publicly owned, or subjected to regulation of profits, perhaps through formal rate-of-return regulation, as in the US, or informal rate-of-return regulation (as in Australia, for most of the regulatory period).

International regulation differed from route to route, but there were important common features. Capacity regulation was very common; typically, two countries would agree on the total capacity to be offered, and they would agree to share it, usually equally. Entry onto most routes was restricted, and most traffic was reserved for two airlines, one from each of the countries at the ends of the route. Collusion and pooling between airlines was permitted, and often encouraged. In the decades following World War II, there was extensive fare-setting by the industry association, IATA, and government regulators ratified the fare agreements that the airlines had concluded. Some countries, such as the US, were more liberal in that they prohibited collusion and sought to promote competition between the airlines permitted to fly on routes. International aviation was dominated by government owned airlines, and even countries that allowed private domestic airlines reserved international aviation for publicly owned airlines.

One feature of the international regulatory system was that it allowed very little scope for trade in airline services. Any route between two countries would be dominated by the airlines of those countries. There could be some participation by third country airlines, on a fifth or sixth freedom basis, but this participation was normally restricted to a small share of the traffic. Thus international aviation was not only collusive and tightly regulated, but it was also protective; even more liberal countries such as the US were not prepared to rely on other countries' airlines and let them enjoy the gains from trade.

Moves towards liberalisation have been taking place at a time when technology has not been standing still. Changes in technology can influence how feasible competition is, and how it works. The development of computer reservations systems has introduced an element of natural monopoly not present before. This has helped larger airlines vis-à-vis their competitors. Further, booking systems have improved so that it is possible for airlines to achieve higher load factors, and thus higher productivity, at no loss of convenience to passengers. Aircraft technology has been changing. In the 1970s the low cost of wide-bodied aircraft encouraged the use of hubs as a means of aggregating loads for long-haul trips. However, since the mid 1980s the development of smaller long-haul aircraft has made direct services on lower density markets more economic, and has led to some bypassing of hubs. The move towards hub-and-spoke networks, especially in the US, was partly the result of deregulation, though technological factors, such as the changing relative unit costs of large and small aircraft, have influenced the trend.

2.1 Patterns of reform
Domestic airline reform has been undertaken in most countries with substantial domestic markets, and it has normally been extensive, albeit sometimes gradual. In the late 1970s
and early 1980s the US completely deregulated its domestic market (Bailey et al., 1983), and other countries have followed suit. Typically, however, there is still a distinction between domestic and international markets; foreign airlines are not able to enter domestic markets, and there are restrictions on foreign ownership of domestic airlines (an exception is New Zealand, where the new entrant airline, Ansett New Zealand, became a fully owned subsidiary of Australia’s private airline, Ansett). Many of the government domestic airlines have been privatised in the last decade. Reforms in a number of markets are summarised in Table 1.

Reform in international aviation has been more gradual and less systematic than in domestic aviation, but there has been very considerable change in the past two decades. Change has been route-by-route, and country-by-country, and it has usually taken the form of smaller steps; in Europe, however, liberalisation was a significant change affecting fifteen countries. Some countries have shifted their policy position sharply, but change can take place subject to their route partners’ acquiescence.

Liberalisation has taken various forms. New airlines, from the end countries, have been permitted onto routes (this has happened in the UK, New Zealand, Australia, and South Korea, among others). Where capacity restrictions remain, which is common except on routes to or from the US, this does not result in much additional competition. Capacity restrictions can be relaxed within an unchanged regulatory structure, so that it is easier for airlines to obtain additional capacity, and fares fall closer to costs. New routes are permitted, and airlines on these are able to compete indirectly with airlines on the existing routes. Some countries, notably the US, have sought to promote competition between airlines serving a route. The result is that some routes are now quite competitive, while others are still restrictive. International aviation has also been affected by the privatisation of airlines.

The changes that have been taking place have been accompanied by changes in airline strategies. These have included mergers, strategic alliances, and code shares. There have been several examples of airlines of one country taking a minority shareholding in airlines of other countries, often in conjunction with a strategic alliance. Sometimes the strategy shifts have been enabled by liberalisation (for example, equity participation), while at other times they have been ways of avoiding regulation, for example, code-sharing arrangements that evade the lack of traffic rights (for an assessment see Button, 1997).

There have been tentative moves towards liberalisation on a regional basis. The most prominent example of this has been in Europe, but other examples include the US and Canada, and Australia and New Zealand. These regional agreements involve a degree of liberalisation within the region, and can involve countries treating the airlines from the region as equivalent to their own airlines as far as routes to countries outside the region are concerned (although existing bilateral agreements still limit the scope for this).

International aviation reform has involved reducing the restrictiveness of capacity limits, allowing more airlines onto routes, and increasing competition between the airlines. It has not, so far, resulted in much opening up of international aviation markets to trade. Most routes are still dominated by the airlines of the end countries. There have been exceptions. For example, Australia realised that it would be very difficult to restrict
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Table 1
Patterns of Reform: Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Deregulation/Liberalisation</th>
<th>Ownership</th>
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<tr>
<td></td>
<td>Domestic</td>
<td>International</td>
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<tr>
<td>USA</td>
<td>Yes</td>
<td>Liberal</td>
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<tr>
<td>Canada</td>
<td>Yes</td>
<td>Moderately liberal</td>
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<tr>
<td>Mexico</td>
<td>Yes</td>
<td>Restrictive</td>
</tr>
<tr>
<td>Australia</td>
<td>Yes</td>
<td>Moderately liberal</td>
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<tr>
<td>New Zealand</td>
<td>Yes</td>
<td>Liberal</td>
</tr>
<tr>
<td>UK</td>
<td>European</td>
<td>Liberalisation</td>
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<tr>
<td>France</td>
<td>European</td>
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<td>Germany</td>
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<tr>
<td>Italy</td>
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<td>Netherlands</td>
<td>European</td>
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<tr>
<td>Spain</td>
<td>European</td>
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<tr>
<td>China</td>
<td>Partial</td>
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<tr>
<td>India</td>
<td>Partial</td>
<td>Some liberalisation</td>
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<tr>
<td>Indonesia</td>
<td>Yes</td>
<td>Some liberalisation</td>
</tr>
<tr>
<td>Japan</td>
<td>Yes</td>
<td>Restrictive</td>
</tr>
<tr>
<td>Malaysia</td>
<td>No</td>
<td>Not liberal</td>
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<tr>
<td>Singapore</td>
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<td>Liberal</td>
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<tr>
<td>South Korea</td>
<td>Yes</td>
<td>Moderately liberal</td>
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<tr>
<td>Thailand</td>
<td>No</td>
<td>Not liberal</td>
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Asian airlines carrying passengers from Australia to Europe on a sixth freedom basis; since many of these passengers were Australian, the government was prepared to allow them low fares rather than protect the home-country airline. The result was that the Australia-Europe route became quite competitive, fares fell, and relatively low-cost Asian airlines gained a large share of the traffic (Findlay, 1985). (Australia has not been as prepared to allow trade on routes on which its nationals make up only a small proportion of the passengers, such as the restrictive Japan-Australia route.) Some countries, such as the US, have been keen to promote competition, but they have been resistant to allowing trade through permitting third country airlines onto their routes or into their domestic market (the US prefers to wait until multilateral liberalisation takes place before doing this; see National Commission, 1993).
Where regionalisation involves a significant number of countries, and where it involves considerable liberalisation, trade can also be encouraged. In Europe, it is now possible for airlines that have low costs to carry traffic on routes that do not include their home country, including routes wholly within another member state. Thus trade between countries within the region will become possible.

2.2 Expected impacts of reform
It was expected that when airline markets were opened up, they would be quite competitive, in that moderately large numbers of airlines would all be able to survive in the market. Thus, it was felt that the US domestic market would be able to support a large number of airlines, although smaller numbers of airlines would compete on individual routes (Douglas and Miller, 1974). Economies of scale were not regarded as a barrier to large numbers of firms surviving in a market, nor were sunk costs regarded as a barrier. There was some concern that only a small number of airlines would be able to maintain a good frequency of service on a route, but there was little attention given to network aspects of competition.

The US domestic market is by far the largest in the world, and analysts were less optimistic that there would be large numbers of firms in smaller markets, such as those of Australia and the UK, among others. However, they considered that numbers would be sufficient to ensure competition that was effective enough to keep prices close to costs. In the early 1980s there was considerable interest in the new contestability theory, and airlines were thought to be quite contestable (Bailey, 1981). Entry and exit would be free in large and small markets, and country or route markets that could only support a few airlines would be likely to be contestable; this would be sufficient to keep prices no higher than they need be to ensure costs were covered. Profits were expected to be more volatile than under regulation, but to be sufficient, on average, to yield the airlines’ cost of capital. Economists dismissed concerns about chronic excess capacity; low profitability on routes such as the North Atlantic was ascribed to the presence of government owned airlines that did not seek to maximise profits, and which were either directly subsidised or were able to cross-subsidise from profitable regulated routes.

Where reform took the form of privatisation it was expected that costs would fall, and that the reliance of airlines on public subsidies would be ended. The impact of privatisation would depend on the nature of the markets in which the airline was operating. In regulated markets, many of the cost savings would go towards a better financial return, while where competition was increased at the same time as privatisation, some of the gains would be passed on to consumers.

In international markets, the expectations depended on the nature of the reform — few of these allowed open competition. Additional competition, along with less restrictive capacity, would bring down air fares, though not necessarily to the level of costs. Where markets were opened up to trade, it was expected that airlines from low-cost countries would gain market share at the expense of airlines from high-cost countries (Findlay, 1985).

Overall expectations were that markets would be sufficiently competitive or contest-
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able for prices to be kept close to cost, and airlines (especially private ones) would have a sufficient interest in profit to ensure cost minimisation. Thus completely deregulated markets with private airlines would achieve high levels of allocative and productive efficiency. In international markets where foreign airlines were permitted onto routes, comparative advantage would prevail, and services would be supplied by airlines from the lowest-cost countries. Since, in most international markets, liberalisation was only partial, there has only been a limited reliance on comparative advantage.

Several possible sources of gain in allocative efficiency were foreseen. In the US it was considered that substantial fare reductions would be possible through increases in load factors (Douglas and Miller, 1974). As a result of inefficient service competition, with fixed fares but unregulated capacity, load factors had fallen to levels that added substantially to cost but little to service quality. Higher load factors would enable lower fares at little cost in terms of convenience, and were also identified as a source of gain in international markets.

Better price structures were also seen as a likely consequence of reform. The regulated airline markets were seen as providing types of service the market did not want — they concentrated on providing for the business traveller while ignoring the leisure traveller, who was prepared to suffer inconvenience to obtain a low fare. With better yield management, it would be feasible for airlines to maintain frequency and convenience, while at the same time offering leisure travellers lower fares, on a restricted or off-peak basis.

Not much attention was paid to network or route realignments as a source of gains; however, it was considered that airlines would be able to choose their routes optimally in the light of customer preferences and costs. It was recognised that competition would mean the end of cross-subsidies; in domestic systems such as those of the US, Canada, and Australia, low-density routes were subsidised by high-density routes. Fares on low-density routes might need to rise, and some routes might not be viable. Direct subsidies would always be an option, if needed, to keep routes being served.

Reform was regarded as likely to promote allocative efficiency and to create few, if any, problems. Airlines would have insufficient market power to indulge in restrictive practices or collusion. In international markets, an additional source of gain would be fare reductions from greater reliance on comparative advantage.

Reforms were also expected to generate gains in productive efficiency — in many systems, these were expected to be the main source of gain. The greater competitive pressure, combined with the withdrawal of regulation that distorted incentives, would result in gains in productivity. Privatisation of public airlines would give them a stronger incentive to seek profit, and thus to minimise costs. This would enable less (or no) reliance on subsidy, and to the extent that markets were competitive, private airlines would be forced to keep prices at the minimum.

A number of studies had suggested that the gains in productive efficiency were potentially large. Within the US, the smaller intrastate airlines were able to operate at significantly lower costs than the large regulated trunk airlines. International comparisons were also important — studies showed that North American airlines had significantly
lower costs than airlines of other countries, especially the airlines of Europe (see, for example, McGowan and Seabright, 1989). The balance of expected gains differed from market to market. Load factor improvements, and associated price structure changes, were expected to be important in markets like that of the US. In Australia, by contrast, load factors were already quite high, but productive efficiency was low compared to that of the US airlines (Forsyth and Hocking, 1980).

3. The Competitive Process
Judged by the original expectations, as expressed before reform had been implemented, airline markets have not turned out to be as competitive or contestable as had been hoped. In most markets, be they country or route markets, there have been fewer competitors than anticipated. Entry has occurred, but it has rarely succeeded. Small markets were not expected to be highly competitive, but they are not as contestable as had been expected. Airline markets seem to be taking a long time to settle down to an equilibrium, raising the question of how stable an equilibrium there is likely to be in a changing environment.

In the US domestic market there is a moderately large number of airlines, but most of them are small, and the market is dominated by half a dozen or so large and relatively successful airlines. Other countries’ domestic markets usually have only two or three airlines. Route markets rarely have more than three or four airlines competing; in the US, there are several potential competitors among the airlines not operating on a route; but on other countries’ routes, there is little by way of potential competition. The only routes to have significant numbers of competitors are the dense international markets, such as the North Atlantic and Asia-Europe markets, which are agglomerations of closely competing routes. Most airline route markets, along with country markets, are oligopolies with a small group of firms.

Across the markets of the world, there has been much entry, although very few entrants into the industry have survived. This is not atypical of other industries; entry is a high-risk, and usually unsuccessful, process (Geroski, 1995). Entrants are relatively common immediately after deregulation, and after the failure of most entrants the flow dries up. Thus entry does not seem to add significantly to the number of firms in the market, and past failures make it less of a credible threat. Airline markets do not meet the conditions for contestability (for example, incumbent firms can readily match the fares offered by entrants, contrary to the assumptions of contestability theory), and the threat of entry is not a strong discipline on market behaviour, especially when there are few firms that can easily enter.

It must be remembered that the starting points at the time of deregulation in the US and in most other systems were different. In the US there were several dozen airlines, of varying sizes, at the time of deregulation. Nearly all other systems are much smaller than the US system and there were very few, perhaps two or three, for whom increases in competition on a route normally had to come from firms newly entering the industry. However, in the US existing airlines could enter new routes relatively easily; at the route
level, potential competition is a more real threat than it is in other systems. Entry and exit by established firms is commonplace in the US.

Contrary to expectations, entry barriers exist. Several factors have contributed to making it difficult for new firms to enter; these have included computer reservation systems, hub dominance, restricted access to airport slots and gates, and customer loyalty schemes (Bailey and Williams, 1988; Morrison and Winston, 1989). The importance of an airline having a good network has become evident. In retrospect, it should not be surprising that these barriers became evident after deregulation. Before deregulation, when entry was blocked, there was no real evidence on whether barriers were high or low; analysts essentially guessed that they were low.

In spite of these barriers, airlines have not been especially profitable; even in smaller markets with few competitors, such as Australia and New Zealand, airlines have not been profitable. Incumbent airlines have been unable to translate limited competition and entry barriers into profit; some possible reasons for this are considered later.

Two questions which are worth exploring are, first, how competition has worked out, and, second, how satisfactory the results are.

3.1 Small group competition

Airline markets have become excellent laboratories for oligopoly theory, and there has been extensive analysis of the way firms compete. Much of this analysis has concentrated on the US experience, but the experience of other markets is also instructive, even if it has not been subjected to as detailed an analysis (see, on the US, Brander and Zhang, 1990, 1993; Dresner and Tretheway, 1992; and Morrison and Winston, 1995; and on Europe, Marin, 1995).

It is not easy to summarise results, though some propositions can be advanced. One is that the number of competitors matters — ever since the early studies it has been apparent that prices are lower when there are more competitors in a route market. It has been less easy to make an exact characterisation of behaviour, such as the extent to which results are consistent with Cournot, cooperative, or Bertrand behaviour. Some have suggested prices between Cournot and Bertrand levels. In some markets, airlines are playing repeated games with long-time opponents, and there is the possibility of tacit cooperation. Brander and Zhang (1993) apply the Porter and Green model of episodic cooperation and competition to routes competed on by both United and American in the US domestic market. They conclude that some periods were characterised by cooperative solutions, with price/marginal cost ratios higher than would be implied by Cournot behaviour, and other periods were characterised by competitive behaviour, although with price/marginal cost ratios higher than would be implied by Bertrand behaviour.

Airlines are often competing with the same firms across a range of route markets. There is some evidence in the US that they treat individual route markets as interdependent, and their competitive strategy on one route recognises the possibility of retaliation by competitors on other routes (Evans and Kessides, 1994). In Australia, where two airlines compete across their entire networks, there is little evidence of different strategies being applied on different routes — in fact the pattern of prices across routes has changed little
since deregulation (however, price structures on routes have changed; see BTCE, 1993). The intensity of competition can vary — the two airlines in New Zealand, one of which was an entrant, appear to have been much less cooperative than the two airlines in Australia.

Most of the analysis of competitive behaviour has focused on airlines' strategies at the route level, and their choice of capacity and price for a single route or group of routes. This work has suggested that airlines recognise their interdependence with each other, and they have often been able to prevent prices falling to the minimum. This minimum, in the short run, may be set at marginal cost or average variable cost, which, when there is excess capacity, will be lower than levels consistent with long-run coverage of costs. The effect of cooperation may not be to earn supernormal profits, but it may lessen or eliminate losses due to excess capacity.

Less attention has been given to the airlines' longer-term strategic choice of how much capacity to make available in the national market in which they operate. Airlines may be less cooperative at this level than they are at the route level, especially in markets like the US where they do not have such clearly defined competitors as on individual routes. At the route level, an airline may have one or two main competitors; taking its network as a whole, it may be competing with several more firms; it will be competing directly with any one airline only on a minority of its routes. In most national markets, some airlines have sought to strengthen their position by adding capacity; excess capacity, except in times of boom, is not rare.

There could be other reasons, such as incorrect expectations, for this excess capacity. One partial explanation of high capacity and poor profitability could be that airlines may be more competitive, and less cooperative, than their behaviour on individual routes or groups of routes might suggest (see Morrison and Winston, 1995, for a discussion of excess capacity issues in the US).

3.2 Entry and contestability
When airline markets are opened up, there is usually some entry. In the US there was a flurry of new entrants after deregulation; of these a few survived for a number of years, but ultimately nearly all failed. Some smaller intrastate airlines and local service airlines managed to survive and expand, but these were not new airlines. In other countries there were new airlines, but these too mostly failed. Typically, new entrants were start-up airlines with limited financial resources, which have not been able to weather long periods of loss-making. There have been exceptions, however — the new airline in New Zealand was Ansett New Zealand, a subsidiary of large companies in Australia. This airline survived a long period of loss-making and established itself in the market. Other successful entrants have included Virgin Atlantic, a subsidiary of an entertainment company; and several UK charter airlines have been offshoots of travel companies (for some detailed studies of entry, see, on the US, Meyer and Oster, 1984; and Joskow et al., 1994; on UK international, Beesley, 1986; and on Australia, Nyathi et al., 1993).

Entrants have normally based their entry on two potential sources of advantage. Some have been able to achieve lower costs than incumbent carriers, because they are not
committed to expensive contracts or unproductive work practices. Cost advantages may be only temporary, since incumbents can cut costs, even though this takes some time. Also, they are of limited value when a new airline is competing with a large airline on only a small number of routes, since the large airline can respond with price reductions with little fear of bankruptcy if competition is confined to a small proportion of its routes, and predatory behaviour is difficult to prove in airlines (see Levine, 1987). Cost advantages were a key reason why several new entrants in the US were able to survive for some years; however, in most cases the incumbents were ultimately able to match them and use other advantages to repel the entrants (Southwest in the US is one entrant that has managed to preserve its cost advantage and prosper). Some entrants have sought to fill market niches, such as markets not well served by the incumbents; this is an even more tenuous source of advantage, since the incumbents have been able to match the new products on offer quite quickly.

Incumbents are usually able to respond to entry with price reductions, which may last only as long as the entrant is in the market. While the advantages they possess may not, in an absolute sense, be very great, they are sufficient to make the difference, since entrants rarely possess any long-term advantages. There is evidence across a range of markets that actual entry does result in price reductions — this is contrary to the predictions of contestability theory, which states that potential entry is sufficient to discipline price behaviour. There is some limited evidence that the threat of entry is sufficient to put downward pressure on prices (see, for example, Morrison and Winston, 1987). In most markets outside the US, there are likely to be few credible potential entrants either into the industry as a whole or onto specific routes. This is partly because of the smaller size of these routes, and partly because of restrictions placed on the entry of foreign airlines, which might sometimes be effective competitors in domestic markets.

The determinants of entry are not easy to characterise, perhaps because entry is not a systematic process. There is some evidence that high prices in a route market are not closely correlated with subsequent entry. This may seem surprising, but it could be explained by entrants realising that the post-entry prices will be lower than the pre-entry prices, and they are not naïve in their forecasts — they may only enter when they genuinely believe they have an advantage and a real chance of success. This is especially true of entry onto a route by an established airline.

Thus entry does not seem to be important in changing the structure of route or country markets. There are fairly stable numbers of airlines in country markets, and on route markets. New entry has not led to the development of a competitive fringe of small yet successful firms, except perhaps in the US. Something of a fringe is now developing in Europe, with airlines such as Virgin Express and Ryanair. In the US, it can be argued to have led to some replacement of old by new (or extant but small) firms, although even this does not seem to have taken place much elsewhere.

It is significant that so few attempts at entry have been made by established firms with strong financial backing. In general, entry into a market is more likely to succeed if the entrant is a strongly supported subsidiary of a firm operating in other markets than if it is a new firm with limited resources. To an extent, the most promising entrants to national
markets, airlines of other countries, have been excluded by regulation. It may be simply
that potential entrants with strong financial backing did not see the rents in airline markets
being high enough, or did not see themselves as possessing advantages sufficient to
counter those of incumbents, to make attempts at entry worthwhile. There has been little
attempted entry into markets that have been, in the past, quite profitable, such as the
Australian market. The regulatory barriers to airlines of one country operating or investing
in domestic airlines of another country, or going into business for themselves, are gradually
being eased in some countries, such as New Zealand and Australia. It will be interesting
to see whether any take up the opportunities that are being opened up, and which strategies
they adopt (investment in local firms, mergers, or setting up new airlines).

Nevertheless, there is a small number of successful entrants, especially in international
markets. In the past, in the period immediately after the opening up of markets, new
entrants have had a significant impact on the way markets have developed. Thus entry has
possibly had an impact on the performance of markets. In several domestic markets, the
recognition of the advantages incumbents possess, along with the history of unsuccessful
entry, are probably enough to deter most attempts at new entry. This raises a question
about how effective the threat of entry will be as a spur to better performance in the future.

3.3 Profitability and stability
A degree of instability was expected as markets moved from regulation to competition,
but the relatively poor profitability that most markets have experienced was not. While
deregulation is fairly recent in some markets, the US experience of poor profitability, over
time, seems to be being repeated in markets such as the Australian and New Zealand
domestic markets, and hitherto strong private airlines have had financial difficulties in the
UK and Canada. Airlines have not been good financial performers in the past; this has been
linked to government ownership and the availability of subsidies. In an unregulated
market with private airlines, profitability could be expected to be volatile, though, on
average, typical for an industry with its level of risk.

Analysing profitability is made more difficult by the fact that there are a number of
factors that affect profitability which have not stayed constant over the period. First, the
industry is cyclical, and it is necessary to net out the effect of cycles on profitability before
long-term trends can be established. In the US, Morrison and Winston (1995) allow for
cyclical and other factors and still conclude that profitability has been low, although they
also conclude that deregulation has had a positive effect on profitability (by giving airlines
a greater incentive to reduce costs and greater flexibility over routes and fares). Liberali-
sation elsewhere has been more recent, and it may still be too soon to be certain about
profitability trends. Apart from cyclical influences, there have been other major factors
that have impacted on airline profitability, such as the fuel price rise and subsequent
slump, and the Gulf War. Overall, however, while one must be cautious, it does seem that
profitability in many markets is lower than expected.

There are some possible explanations of less-than-expected profitability, even though
no complete answer can be given. Morrison and Winston (1995) explore the possibility
of poor forecasts of demand by US domestic airlines. As mentioned above, airlines, when
they determine overall capacity for the market, appear less implicitly cooperative towards one another than when they compete on specific routes, and the poor profitability might be partly explained by attempts to secure larger market shares in the long run. It could also be that precise matching of capacity to future demand is difficult, and that airline markets take a long time to settle down; low profitability may be a passing phase. Indeed, it might look as if those who had forecast that airline competition would be inherently unstable, with chronic excess capacity and low profitability, might be right, although it is too early to conclude this.

There are some patterns in the profitability picture across different markets. As a general rule, the newly privatised airlines (British Airways, Qantas, and Air New Zealand) seem to be doing relatively well, but some of the older private airlines, such as Ansett in Australia, and Canadian Airlines International in Canada, have had difficulties. The privatised airlines tend to be larger, with better international routes. Some, such as Qantas and Air New Zealand, have sought to gain an advantage over their main competitors by scheduling higher frequencies, something their size advantage helps them to do. The process of privatisation focuses their attention on efficiency and performance, and this may go beyond cost cutting.

So far, even in smaller aviation markets, there does not appear to be much evidence of strong market power. There are problems caused by computer reservation system access, hub dominance, and access to terminals, and these appear to result in higher prices on the routes directly affected. However, they do not seem to have translated into systematically high prices across the industry, nor do they seem to have led to higher than normal profitability in the national markets as a whole. If anything, there is some concern over the long-term profitability, and such low profitability and instability are associated with small numbers of firms, rather than with too many firms. While entry has been important immediately after markets are opened up, once markets have settled down it has played only a minor role in the competitive process.

4. Measuring the Gains from Reform

4.1 Price structures and load factors
Changes in price structures and load factors were expected and did occur. In some systems, such as the US domestic system, load factors were seen as inefficiently low owing to service competition, while in others, higher load factors were seen as possibly achievable through better tailoring of fares and conditions to passenger preferences. In all deregulated systems there has been an increasing spread of fares available — discount fares are more readily available and are deeper (Bailey et al., 1983; Oum et al., 1991; and BTCE, 1993). Load factors have been increasing.

It is difficult to be certain of the effects of deregulation, since these changes have also taken place in some regulated systems. Fare structures have been changing, to a greater or lesser degree, around the world. Airlines operating in regulated environments have sometimes had an incentive to make better use of their capacity through yield management
programmes. Deregulation has not so much made such changes possible as made them essential for survival in competitive markets. Airlines have a heightened incentive to optimise their fare structures.

Not all airlines have chosen to serve both business and leisure markets through tailoring their fare structures. Some have sought to offer low fares on a generally available basis; most of these have failed (the significant exception being Southwest in the US — the experience of the European airlines with this type of fare structure will be interesting). The economies of scope in serving different but related markets are such that it is not feasible to specialise in one market segment, except in very dense markets. In addition, it is possible that there are potential rents in serving particular markets, such as high-fare business markets.

The changes that have taken place in load factors match expectations. The largest changes have taken place in the US domestic market. Load factors were recognised as being inefficiently low, and even without changes in fare structures they could have been expected to rise. Load factors in Canada have also risen (Oum et al., 1991). They have risen in Australia, but this has been the continuation of a process which started well before deregulation (BTCE, 1993). Load factors have risen with better fare structures in some regulated markets, but it is noticeable that in Europe they have not changed much and are still at rather low levels.

The design of fare structures is consistent with promoting better use of capacity. Normal coach/economy fares have remained with conditions that make them very flexible fares for the traveller, though costly for the airline to provide. Discounts are given on fares having conditions that reduce the costs to the airline; they are available on off-peak flights or flights that are expected to be lightly loaded, for early booking with restrictions on changes in flight plans, and for fares embodying a standby element. Low fares are available for those who do not value convenience, while convenience is available for those willing to pay a price for it. A major problem with several (rate-of-return) regulated systems was that airlines did not see any reason to complicate their lives by offering discount fares and needing to fill capacity more effectively.

One result that had not been anticipated was that the price structure diverged from what would have occurred in a perfectly competitive environment. Fare structures usually embody a measure of price discrimination. Discount fares are sometimes subject to conditions, such as staying over on Saturday nights, which do not contribute to cost savings by the airlines. Some specific groups, such as older travellers, are given discounts that are unlikely to be cost-related. At the other end of the scale, airlines behave as though there are rents to be obtained in serving certain segments of the market, such as business travellers. Thus they are willing to enter non-price service competition to gain a share of the higher price, and perhaps higher-profit traffic. Competition has not been strong enough to eliminate price discrimination.

In spite of this, it does not follow that this use of market power has been efficiency-reducing. Price discrimination can be efficiency-enhancing, and it has been argued that this is the case in airlines (Frank, 1983). There are economies of density, which can be manifested through lower costs if larger aircraft are used, or higher frequency, or some
combination of both these. A competitive market would under-supply frequency, since it is difficult for firms to capture the benefits of frequency. By charging higher prices to those who value frequency, greater revenues and greater frequency can be achieved. Thus the main “market failure” observed in airline pricing is in fact a device that counteracts another market failure.

4.2 Service quality and network patterns
Relatively little attention had been given to service quality and network issues (an exception on the former being Douglas and Miller, 1974). It is well known that there were major changes in network patterns in the US with the development of hubs and spokes; these had major implications for the frequency of flights and the routings offered to passengers. Changes outside the US were less pronounced, because airlines had been less constrained in their network choices in domestic markets, and networks are still quite constrained by bilateral regulation in international markets. The changes in the US were significant, and were sources of net benefits (Morrison and Winston, 1995). Gains from service quality changes in other systems, mainly in terms of frequency, have been judged to be positive though not large (for Australia, see BTCE, 1993).

4.3 Productivity and prices
While there was significant scope for welfare gains from improved allocative efficiency, especially in the US, increases in productivity and reductions in cost were regarded as the main likely source of welfare gain, especially outside North America. It is difficult to separate out pure cost reductions from gains that come from better use of capacity, and most productivity measures do not provide much information about the source of gains.

Periods of liberalisation are often coincident with widespread changes in airline industries, and this makes determining the impact of deregulation difficult. Fares may tumble for a while, but capacity may increase with new firms entering, and profits may also fall (much of the reduction in fares in the initial post-deregulation period in Australia was matched by reductions in airline profits). In the US, deregulation was followed by the oil crisis, with rapidly rising fuel prices.

It is possible, though not always easy, to standardise for these. What is difficult is answering the question of what would have happened if deregulation had not taken place. No analysis has been able to provide a perfectly satisfactory counterfactual. It is possible to compare productivity growth in the post-deregulation period with that in the pre-deregulation period; if growth increases, the change might be attributed to deregulation. This method supposes that growth would have remained the same in the absence of deregulation. This might not be the case, however, if the underlying rate of technological growth changes.

Alternatively, growth in the deregulated system might be compared to growth in another that has not faced a change of regime. The difficulty with this comparison is that other factors in the regulated system may have been impacting on productivity growth. On top of these, there is the added complication that productivity measures are themselves of only limited reliability, especially when they are being used to compare across airlines.
with very different operating characteristics, such as scale, market density, and average stage-length.

Having said this, the results from the available studies are positive (though the results have not been overwhelming). The US market is the one that has been subjected to the most thorough analysis. Early studies, such as that of Caves et al. (1987), suggested that deregulation had increased productivity growth (by comparison with growth in the regulated European system); by 1983, productivity had increased by 10 per cent over the estimate of what it would have been. Later studies have built on the original estimates — for example, Morrison and Winston (1995) conclude that, apart from providing gains in service quality, deregulation resulted in fares being 22 per cent lower in 1993 than they might have been.

There are good reasons for regarding this as an upper estimate. It is based on actual productivity growth measures to 1983, and projects them to 1993; it assumes that the increase in productivity growth owing to regulation was 1.2 per cent per annum, excluding the effect of higher load factors, and 1.45 per cent per annum including the effect of higher load factors. There is evidence that the effect of deregulation on US airlines’ productivity had been more or less completed by the mid to late 1980s. Oum and Yu (1995) estimate the productivity growth of major North American airlines from 1986 to 1993 at 0.7 per cent per annum, below that of other groups.

Other studies have shown higher productivity growth in the US than for European airlines over the initial post-deregulation period — for example, Barla and Perelman (1989) estimate per annum productivity growth from 1976 to 1986 at 1.48 per cent for European airlines, compared to 1.83 per cent for US airlines. Not all studies agree; Dempsey (1990) argues that there has been little change in productivity growth compared to previous decades.

Overall, there does appear to be strong evidence of a shift in productivity growth in the post-deregulation period (some of this being due to higher load factors, as well as lower costs per seat-mile). It can be maintained that most of the gains from deregulation of the US system should have been achieved by now; indeed, perhaps by the mid 1980s. This is to be expected as other systems liberalise and airlines approach the standards of the more productive US airlines. Analysing effects in one system by comparing with performance in others is becoming more difficult, because most systems are now being liberalised to some extent.

Many other airline systems have been deregulated, but their deregulation has been more recent, and has not been subjected to such extensive evaluation. Oum et al. (1991) estimate that by 1988 deregulation had increased consumer surplus (with profits constant) by 9.3 per cent of revenue on its own, and by 14.5 per cent in combination with the privatisation of Air Canada. Deregulation in Australia was more recent, but a study of the first two years’ experience suggests that there were small net welfare gains, of about $100 million on revenues of over $3,000 million; prices fell considerably, but so did profits. A complicating factor is that deregulation had a long lead time, and the airlines were reducing costs well before markets actually opened. Thus this is probably something of an underestimate.
European liberalisation has been limited so far, and it has yet to make a large difference to the behaviour of firms. It is possible that airlines may be reducing their costs in anticipation of liberalisation, which has been foreshadowed for a considerable period. The productivity growth of European airlines since the mid 1980s is, if anything, higher than that of US airlines; this could be because the US airlines have made their possible cost savings, and European airlines have only just started theirs. It is also worth bearing in mind that most European airlines have a high share of their traffic on non-European routes, such as the North Atlantic, and competitive conditions on these have been changing.

Several international bilateral route markets have been liberalised, but it is difficult to evaluate efficiency gains. Since costs are reported by airlines, not routes, it is not possible to evaluate the effects of liberalisation on costs. Liberalisation on a route basis is often followed by fare reductions, and this is consistent with improved performance. However, it is inadvisable to read too much into route-specific results, since lower fares may have come at the expense of higher fares elsewhere. While international liberalisation has probably been a spur to improved performance, it is not possible to conclude by how much.

Privatisation is another reform that was expected to bring productivity improvements. The privatisation of British Airways is the most prominent example. Before privatisation it started reducing its costs, and this process continued well after privatisation. Prior to privatisation, there was evidence that it was a relatively less efficient airline (Forsyth et al., 1986) and there was scope for improvement. Since the mid 1980s it has had a high growth rate of productivity (Oum and Yu, 1995), although not all agree that its performance has been impressive. Dixitexhe and Perelman (1994) find that British Airways was only a moderate performer, but their data ended in 1988, and there is evidence that BA’s productivity growth has been very good since then.

Other privatisations have attracted less interest. Oum et al. (1991) conclude that the privatisation of Air Canada made a significant difference to its costs, although more recent productivity studies suggest that it has not been performing so well lately (Oum and Yu, 1995).

Qantas has only recently been privatised; it appeared to achieve high productivity growth in the years just before privatisation (Oum and Yu, 1996). Since privatisation, Qantas has been performing much better than Ansett in the domestic market.

Singapore Airlines, which has been partially privatised, has had high productivity growth for many years, and it is difficult to separate out any effects of privatisation.

One difficulty with assessing the effect of privatisation, in other industries as well as air transport, is that cost reductions usually start well before privatisation actually takes place, as governments prepare their enterprises so that they achieve high sale prices. This poses the question of whether privatisation is really necessary. Whether it is or not, it at least acts as the catalyst for cost reductions. Most airline privatisations can be regarded as successes, even though it is difficult to make precise measures of their impact on costs.

4.4 Assessing the gains
Overall, the results of deregulation have been good, though not as impressive as had been hoped. The clearest gains so far have been in the US and Canada, which have had the
longest time to adjust. In other systems results have been more modest, in spite of the fact that their airlines were starting from a lower productivity base.

In the US, some of the more optimistic forecasts were made by comparing the productivity performance of the trunk and local service airlines with that of the intrastate airlines; this suggested that large reductions in costs were possible. In retrospect, this seems to have been an inappropriate comparison, since the nature of the operations and product were different. Furthermore, they still are. Southwest is still able to achieve lower unit costs by a considerable margin. It has been growing and has been successful, but it has not become dominant. To a large extent, the other airlines have higher costs because they are supplying a different and more expensive product.

While the experience in the US, and perhaps Canada, is close to the more sober expectations, the experience elsewhere is more difficult to explain. Hopes for gains were greater because the initial levels of productivity were lower than in North America, yet so far the gains appear smaller. More gains are probably in the pipeline. However, it is possible that the forecast gains were an overestimate, because relevant factors were not included in the productivity comparisons. For example, labour arrangements in other economies may be less flexible than they are in the US, and it may not be feasible for airlines to match the labour productivity of their US counterparts, even if they use such devices as setting up low-cost subsidiaries. Another possibility is that the intensity of competition in these markets, which is lower than it is in the US (most domestic systems have no more than two main airlines), may not be great enough to ensure the maximum feasible cost reductions.

The real test will be after the completion of European deregulation in 1997. Because of the large measured productivity gap between the European and North American airlines, there should be scope for substantial gains. With a large number of airlines already operating, the intensity of competition should be sufficient to ensure that these come about.

5. Conclusions
Deregulation has been implemented in a range of domestic and international markets, but it has not resulted in as much competition, measured by the number of competitors in national or route markets, as had been expected. Apart from in the US and on some international routes such as the North Atlantic and the Asia-Europe routes, not many routes are subject to strong potential competition in the sense that there are established airlines that can readily enter the route. Entry by new firms is difficult; not much happens once the first wave of entry after deregulation has been sorted out (with most entrants exiting in one way or another). There has been scope for entrants supplanting less adaptive incumbents (for example, smaller airlines supplanting trunk airlines in the US), though entry does not lead to significant increases in the numbers of competitors.

The result has been that small numbers of competitors typify most airline route markets, and not many national markets other than the US have more than a few firms.
The Gains from the Liberalisation of Air Transport

P. Forsyth

Airlines recognise that they are long-term competitors, and they are often able to cooperate tacitly to increase prices. Some also dominate hubs, or have preferred access to infrastructure such as gates or slots. They are able to raise prices above marginal costs; this would be at some cost in terms of allocative efficiency, although this cost is probably not very large.

The question of why they are unable to translate these advantages into above-normal profitability remains. Airlines in most systems are rather less profitable than might be expected; this suggests that they are earning less than normal profits on more competitive routes. Airlines appear to be more cooperative with each other at the level of pricing on routes than at the level of capacity decisions. They still seem to be investing in more capacity than is consistent with profit maximisation, perhaps with the intention of securing some long-term advantages.

Reforms have resulted in the products of the industry changing substantially. Economists forecast the changes in price structures accurately, and these have been major sources of efficiency gains. These trends are also apparent in regulated route markets, but deregulation has encouraged them. Changes to service patterns and networks were less anticipated, though they too have been a source of gain, especially in the US.

Productivity improvements leading to cost and price reductions were expected to be the largest single source of gain. They have been so in the US, although significant unit cost differences between airlines remain. The more optimistic projections, based on comparisons of trunk with intrastate airlines, have not materialised, suggesting that some of the sources of the cost advantage cannot be replicated by larger airlines with much more extensive and complex networks.

Outside the US, privatisation is associated with improvements in performance. Deregulation has also resulted in gains, though often less than expected. Projected gains were often based on comparisons with the unit costs of US airlines. These differences have been partly due to efficiency differences, but also appear to have been due to differences in service quality, operating environments, and labour market arrangements. It is also possible that the lack of significant numbers of competitors, especially new entrants, has meant that the pressure to reduce costs to the minimum is less strong than it is in the US. Perhaps, over time, unit costs and prices in these systems will move closer to those in the US. European liberalisation will be the critical test case; it is a large system with many established airlines, but their measured efficiency is significantly lower than that of their US counterparts. A liberal environment should be able to result in major gains.

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