# POLICY FORUMS

## CHANGES IN THE AIR?

### *Issues in Domestic Aviation Policy*

Christopher Findlay • Michael Kirby
• Frank Gallagher • P. J. Forsyth • David Starkie
• Margaret Starrs • Colin Gannon

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# CONTENTS


Foreword vii
**Ross Parish**

Is Air Transport a Contestable Market? 1
**Christopher C. Findlay**

The US Airline Deregulation Experience and its Implications for Australia 11
**Michael G. Kirby**

Discussion 29

Integrating Domestic and International Aviation 31
**Frank Gallagher**

Airline Costs, Revenues and Profit during a Recession 39
**P.J. Forsyth**

Discussion 49

Regulatory Change and Competition in the South Australian Airline Market 53
**David Starkie and Margaret Starrs**

Airport Runway Capacity in the Sydney Region: The Problems of Allocation and Expansion 75
**P.J. Forsyth**

Discussion 87

Three R's of Domestic Aviation Policy in Australia: Regulation, Redistribution and Risk 91
**Colin A. Gannon**

Discussion 101

Index 110

# Foreword

The US Airlines Deregulation Act of 1978 and the prior *de facto* deregulation accomplished by the Civil Aeronautics Board constitute one of the few contemporary examples of rapid and substantial deregulation of an industry. Its political significance is obvious. To the applied economist it is also significant in that, while falling short of being a controlled experiment, this episode nevertheless provides unusually good opportunities for empirical tests of theories about the effects of regulation. A number of such studies have already appeared, and doubtless many more will be made. In this volume Michael Kirby summarises the major apparent effects on the United States industry's structure and performance. In the same vein, a detailed study by Starkie and Starrs of the effects of some relaxation of regulation on regional aircraft operators in South Australia is also included in the volume.

It is also significant that at the same time as the intellectual impetus toward airline deregulation occurred, a new theory of the relationship between market structure and performance was developed, and that, in part, the same people were involved in both endeavours. The development of the theory of market contestability, it seems clear, was stimulated by the practical concerns of the airline deregulators and by their empirical knowledge of the industry.

As Christopher Findlay points out, the major rationale for airline regulation has been the belief that air transport is a natural monopoly. Contestability theory — summarised here both by Findlay and by Starkie and Starrs — casts considerable doubt on this belief. This is because even though many Australian markets are 'thin', permitting only one profitable operator, they are contestable, i.e., vulnerable to entry by outsiders, who can enter without incurring substantial sunk costs. The single operator may, in a sense, be a monopolist, but his monopoly power is sharply limited by the threat of entry.

I think the papers constituting this volume are of high quality. They are evidence of the big advances that have been made in recent years in our understanding of economic aspects of air transport and of the issues involved in its regulation — advances in the making of which the authors represented here have figured prominently. The Centre for Independent Studies is proud to have sponsored the Conference on which this volume is based, and to bring the participants' contributions to a wider audience.

**Ross Parish**

# Is Air Transport a Contestable Market?

*Christopher C. Findlay*

**Christopher Findlay** is a Lecturer in the Economics Department of the University of Adelaide. He completed his Ph.D. in The Faculties at the Australian University in 1982 on the topic of Australian regulation of international civil aviation. His current research interests include issues in international trade policy.

# Is Air Transport a Contestable Market?

*Christopher C. Findlay*

## I. AVIATION POLICY ISSUES

The recent attempt by East-West Airlines to compete on domestic trunk routes has renewed interest in the question of the number of airlines permitted to operate on various routes in Australia. There is a fear that only one airline would survive competition on trunk routes. Some commentators argue it would be efficient to limit the number to one, while the current regulations protect two, and some people — like East-West — would prefer three.

The size of the Australian market and the view that scale economies are significant in civil aviation have led to the conclusion that air transport is a natural monopoly. The surviving firm could be expected to use its power to exploit consumers. The response to this analysis of the characteristics of air transport has been extensive regulation (for a thorough review see Kirby, 1981). Two airlines were designated to operate on the trunk routes. Regulation attempted to strike a balance between the cost advantages of a single carrier and the opportunity for competition. The designated carriers were protected from entry, so they could plan in a stable market and exploit any economies. In return for this privilege they had obligations. They were expected to provide services to relatively small and isolated communities and to cater for a wide range of tastes — all at 'reasonable' prices.

The theme of this perspective was smallness. The Australian market was small, so it was in danger of exploitation by a monopolist. Some routes were small, so they may not have been served. Some groups of passengers were small, so they may not have been offered special service. The question in this paper is whether 'small' is bad or beautiful?

## II. CHARACTERISTICS OF AIRLINE COSTS

Although commentary on the Two-Airline Policy usually stresses the relatively small size of the market in Australia, it is not size alone that is

important. The same Australian market supports a number of producers of other commodities and services where markets are highly competitive. The assumption being made about air transport technology is that there are significant scale economies in the production of the service. To assess the merit of regulation, we must start by examining the characteristics of air transport costs.

## Aircraft size

There are substantial scale economies with respect to aircraft size. Costs per seat fall as aircraft size increases. This is illustrated in Table 1, which is taken from a paper by Bailey and Panzar. Average cost on the larger aircraft is lower for each stage length.

**TABLE 1: Economies of Aircraft Size, 1980**

| Stage Length | Aircraft | Seats | Average Cost per passenger* $US |
|---|---|---|---|
| 800 km | CV 580 | 56 | 61 |
| | B 737-200 | 130 | 42 |
| 1600 km | B 737-200 | 130 | 64 |
| | B 727-200 | 162 | 58 |
| 2400 km | B 727-200 | 162 | 81 |
| | DC 10-10 | 380 | 69 |

* 75 per cent load factor

**Source:** E.E. Bailey and J.C. Panzar, 'The Contestability of Airline Markets During the Transition to Deregulation', *Law and Contemporary Problems*, 44, Winter, 1981, pp. 125-146.

This economy suggests there would be cost reductions from concentrating traffic into fewer flights on any route. But this move would lower flight frequency and reduce service quality, since passengers would have to wait longer for a flight. The cost of this reduction in service quality constrains the extent to which aircraft size can be increased (Forsyth, 1983). The presence of these economies has implications for service to smaller communities.

**Smaller communities**

One option for serving smaller communities is to offer direct flights to all destinations. The flight frequency on each route is low under this option in order to exploit the economies in aircraft size. Another option is greater use of networking. Smaller communities are served by more frequent flights to a local hub where passengers change planes, join others from their region, and fly to another hub on a larger aircraft. Elizabeth Bailey, during her recent visit to Australia, emphasised the increased use of hubbing in the deregulated US market.

The local community would probably prefer direct service, since the total trip time will be shorter. On the other hand, flight frequency may increase with hubbing, so the net effect is uncertain.

Some communities may not justify commercially any air transport service. Passengers in that case will be forced to use other modes of transport. If the broader community believes it is valuable to have high quality air transport within close reach of all consumers, then it could demand that regulated carriers cross-subsidise routes. But the more efficient approach is to subsidise the service directly so that a relatively small burden is borne by all taxpayers rather than taxing a smaller group of consumers at a higher rate.

**Range of service on each flight**

The economies in aircraft size explain why air transport is provided in lumpy units at discrete intervals. When each flight provides just one type of service, and when the market is small, it implies long waits by consumers for a particular type of travel. Thus there are economies from combining various types of service on one flight. These include the opportunity for passengers to buy a seat on the flight at very short notice. This service can be made available by reserving a block of seats that normally has a low load factor at a relatively high fare. There are also economies from combining freight and passenger service.

In the markets where passengers regard intervals between flights as significant, each flight will provide a range of types of service. Some types of service may not be available. If the broader community believes such service should be available, the efficient approach is to subsidise those services directly rather than tax some consumers of air transport and subsidise others.

In summary, there are economies from combining various types of traffic on the same flight, either passengers from different locations in a region or passengers who prefer different degrees of service quality.

**Number of firms on a route**

These characteristics of air transport mean that on some routes there are few flights per week. What is the implication for the number of firms operating on those routes?

There may be significant fixed costs of entry to a route so that as more flights are added the costs per unit fall. This characteristic suggests that routes with few flights will tend to be served by only one firm. These economies are likely to be exhausted after a couple of flights per day so that denser routes can support a larger number of operators. White concluded that scale economies would by important only on city pairs at 'low' output (1979:571).

**Number of firms in a network**

Even if scale economies are quickly exhausted on city-pair routes, there could be economies over the whole network. The number of firms in the network will depend on economies in firm size.

Reviewers of the literature on scale economies generally report that there are no significant economies in firm size (Bailey and Panzar, 1981; Grenning and Coat, 1970; Kirby, 1981; White, 1979). Kirby estimates that the minimum efficient scale of operation involves five aircraft (1981:34). These results support the view that economies on an individual route will be exhausted on dense routes, and suggest that more than one firm could survive in a network.

The popular view is that scale economies at the firm level are significant. Kirby reports that many participants in the airline regulation debate claim the existence of significant scale economies (1981: ch. 2). Brogden (1980) argues that open competition would lead to a single airline, implying that scale economies are significant. The statistical evidence does not support these views.

**Summary**

There may be single firms operating on some routes owing to economies in aircraft size and in increased output at low levels of output. On the denser routes, and over a whole network, a number of carriers can continue to survive. In that case, operators will be disciplined — in the absence of regulation — by their competitors. How can the single operator on a route be disciplined?

## III. CONTESTABLE MARKETS

Ideally, a single firm should be continually vulnerable to competitive forces. If the incumbent is inefficient or charges excessive prices, then successful entry by new firms should be possible and profitable (Bailey, 1981). This will happen if the market is contestable (Bailey and Friedlaender, 1982; Baumol, 1982). Other firms should be able to enter the route on equal terms to the incumbent and have freedom over pricing. Ease of entry requires that durable goods that account for high fixed costs be readily transferable to other markets — for example, by second-hand sale or alternative deployment — so that their cost is recouped. Similarly, human skills specific to the industry should not be specific to a particular route but transferable from market to market. These conditions mean that potential entrants can 'hit and run' at little cost.

Sunk costs — that is, costs that must be incurred to enter a market but cannot be recovered on exit — will deter entry. There will always be some sunk costs so few markets will be perfectly contestable. When sunk costs are significant, the entrant must estimate more carefully the profit that can be earned before the incumbent responds and the probability that the entry bid will not succeed. Size of sunk costs remains a critical variable.

Air transport involves substantial capital costs but these are not sunk. For example, the major item of capital is the aircraft, which can be flown on any route making entry easy to particular routes. The major sunk costs in air transport are airports. Access to these facilities, whether privately or publicly owned, should be arranged to avoid exploitation of monopoly power (Bailey, 1981).

There must be a pool of potential entrants for incumbents to be vulnerable to competition. This is the case in Australia. There are only two trunk operators but many regional operators and commuter firms. There are other firms in the economy — particularly freight carriers — who currently operate aircraft and could enter these markets. Finally, a large number of international carriers who fly to Australia could be potential entrants to the trunk routes.

There is some pricing freedom under the current regulatory system but there is not free entry. Behaviour under this system should not be used to predict the type of behaviour that would be observed with free entry and pricing freedom. Under the current system, incumbents have incentives to cut prices to drive out other firms (perhaps entrants on substitute routes) because the restriction on entry makes future profits likely and those profits could compensate for losses during the fare war.

Behaviour in deregulated markets in the US can be used to predict behaviour under deregulation in Australia. The total market in the US is

much greater than in Australia. Critics sometimes claim this negates the value of any comparisons. But there are thin routes in the US where conditions are similar to those in Australia and the experience of deregulation relevant. Bailey and Panzar observe, for example, that the threat of entry by trunk carriers imposed an effective competitive check on single local service carriers operating on long haul routes. The lesson for Australia is that even if routes are served by one carrier, potential competition can discipline the natural monopolist.

## IV. CONCLUSION

The Australian market is relatively small. The large continent and small population mean that many routes are thin. The nature of air transport technology means that, ideally, some routes will be served by only one operator. But this need not be a problem. The characteristics of air transport — in particular, the flexibility of its major fixed cost, the aircraft — mean that such markets are contestable. The threat of *potential* entry disciplines the behaviour of the single operator. Service by a single operator is not likely to be observed on the denser trunk routes. On those routes, *actual* competition will discipline the operators.

The question posed was: what is the correct number of operators on Australian routes? My conclusion presumes that action is taken to permit entry of new firms on equal terms, which depends especially on access to terminals and airports. The answer depends on the density of each route: one operator could be appropriate but one firm will not dominate the whole system. The least cost number on a route will emerge in competition and even if the outcome is one, the threat of potential entry can discipline the incumbent.

# References

Bailey, E.E. (1981), 'Contestability and the design of regulatory and antitrust policy', *American Economic Review* 71(2, May).

Bailey, E.E. and A.F. Friedlaender (1982), 'Market structure and multiproduct industries', *Journal of Economic Literature* 20(3, September).

Bailey, E.E., and J.C. Panzar (1981), 'The contestability of airline markets during the transition to deregulation', *Law and Contemporary Problems* 44(Winter).

Baumol, W.J. (1982), 'Contestable markets: An uprising in the theory of industry structure', *American Economic Review* 72(1, March).

Brogden, S. (1980), 'Fly United', *Australian Penthouse* May.

Forsyth, P.J. (1983), 'The cost of convenience in transport: The case of airlines', paper presented to the Analytic Economics Conference, ANU, February.

Grenning, M. and J. Coat (1970), 'The natural monopoly argument for regulation: Does it apply to Australia's domestic airlines?', paper presented to the Eighth Conference of Economists, La Trobe University, Melbourne.

Kirby, M.J. (1981), *Domestic Airline Regulation: The Australian Debate*, Centre for Independent Studies, Sydney.

White, L.J. (1979), 'Economies of scale and the question of "natural monopoly" in the airline industry', *Journal of Air Law and Commerce* 44.

# The US Airline Deregulation Experience and Its Implications for Australia

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# The US Airline Deregulation Experience and Its Implications for Australia

*Michael G. Kirby*

## I. INTRODUCTION

In Australia, as elsewhere, the issue of the most appropriate economic policy for the airline industry provokes a lively debate. Participants in this debate cannot afford to ignore the experience in the US industry over recent years, particularly the government's revolutionary deregulation policy. This experience provides an important source of empirical information about airline economics and policy. However, in many Australian circles knowledge of the US deregulatory experience is often only sketchy and anecdotal in nature. This paper surveys the extensive literature on US airline deregulation, presenting a brief summary description of recent events and developments in the US industry and comments on the relevance of this experience to the Australian situation.

## II. THE US AIRLINE INDUSTRY BEFORE DEREGULATION

### The regulatory framework

The US airline industry has a tradition of extensive regulation dating from 1938 (more detailed descriptions of the regulatory framework in the US airline industry are available in Douglas and Miller, 1974; Kennedy, 1975; and Keeler, 1978). Policy was oriented towards government promotion of the air transport system and protection of the industry and was pursued through public utility style regulation. In particular, airline policy was often interpreted by the Civil Aeronautics Board (CAB), the principal US regulatory authority, as allowing or requiring anti-competitive policies.

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Much of the research for this paper was undertaken while the author was employed at the Australian National University. The views expressed do not necessarily reflect those of the Bureau of Agricultural Economics.

The CAB controlled the number of airline carriers in the industry and the routes on which each could fly. This control was typically exercised in a highly restrictive manner. For instance, no new trunk carriers were certificated from 1938 to 1976. In addition, entry was controlled into every individual airline market by means of route authority cases, which effectively limited most routes to two or three carriers. Under a route moratorium no new route authorities were granted from 1970 onwards.

Fares were set according to a formula that related standard fares to distance travelled. The formula was supposedly based on average industry costs, assuming a 55 per cent load factor and 12 per cent return on capital. However, the chosen formula resulted in fares less than cost for distances under 400 miles and greater than cost for those over 400 miles (Kahn, 1983). While some discounts were allowed at times, airlines were not generally permitted to set prices below the standard fares.

Subsidies were available to trunk and local service airlines to provide minimal adequate service to smaller communities. This often consisted of one flight per week.

It is also important to note the areas of airline activity that were not subject to detailed regulatory controls. These included aircraft type and capacity, inflight services, and timetable schedules.

**Economic assessment**

This system of airline regulation was sharply criticised by many economists as being inefficient and contrary to general community interests (Levine, 1965; Douglas and Miller, 1974; Keeler, 1978). Fares were alleged to be set too high in that the allowed rate of return on capital was in excess of that required to earn a normal rate of profits. In response to these administered prices and the supernormal profits implicit in them, a tendency towards competition developed. This mainly took the form of nonprice competition, e.g., improved scheduling, aircraft type and size, and inflight services. It resulted in low load factors, large aircraft, frequent flights, and average or normal financial returns to the carriers. While this nonprice competition yielded some benefits to passengers it was generally thought that the price/quality combination of services provided was higher than desired. Empirical evidence to support this analysis was found in the behaviour of intrastate carriers in California and Texas, which were outside CAB control and charged fares up to 50 per cent lower than the trunk airlines.

The lack of new entry into the industry and into individual markets inhibited innovation and the provision of alternative price/quality options for air travellers. In addition, airline networks were poorly integrated, with suboptimal route structures owing to the difficulty of acquiring new

routes. The CAB awarded routes with little thought for selecting the minimum cost carriers. Instead, the main criterion for selection was route strengthening aimed at improving the financial viability of carriers. The result was an industry characterised by geographic specialisation and sharp boundaries between carriers (trunks, local service and commuters) — characteristics largely unrelated to economic and market realities.

Finally, the lack of competition meant that airline managements had reduced incentives to resist union demands, which led to so-called 'regulation exploitation' by employees. The resultant high labour costs took the form of not only higher wages and salaries but also restrictive work rules.

## III. US AIRLINE DEREGULATION

Two phases of deregulation can be identified: first, *de facto* deregulation where bureaucratic decisions gave the industry increased freedoms; and second, *de jure* deregulation with the introduction of new legislation governing the US airline industry.

From the mid-1970s onwards the CAB began to adopt a less restrictive regulatory stance (CAB, 1982a). The route moratorium ended in 1975. In October 1976 the CAB relaxed the group affiliation rules for charter flights, thus providing a competitive alternative to existing scheduled services. In April 1977 restricted deep discount fares, e.g., the American Airlines' Supersaver fare, were allowed so that scheduled carriers could match the charter operators. By March 1978 these had spread throughout the networks. In September 1978 the CAB introduced its 'zone of reasonableness' approach to air fares under which carriers could readily vary their fares from the standard formula rates within the range minus 50 per cent to plus 10 per cent. In addition, route award procedures were streamlined. Fare proposals were considered in making route awards from early 1977, while proceedings awarding routes to several carriers were introduced in 1978. By January 1979 the CAB had essentially removed most entry barriers.

The Airlines Deregulation Act of 1978 signalled the *de jure* phase (for a detailed summary of the Act, see Dubuc, 1979). This Act provided, on a phased basis, for extensive deregulation of the airline industry. In particular, it introduced virtually unrestricted entry and fare adjustment.

The Act provided a timetable for reform. The CAB would lose its route authority in December 1981 and its rate authority in January 1983, while the CAB itself would be terminated in January 1985. However, the effects of the Act were almost immediate. In ordinary route award cases willing entrants were usually admitted and the burden of proof was shifted so that opponents to entry were required to show that the proposed

entry was against public convenience and necessity. The Act also provided a statutory zone of reasonableness for air fares.

The importance of the Act was twofold. It ratified the earlier *de facto* deregulatory actions of the CAB, thus protecting the CAB from possible court cases. But, more importantly, it provided a permanent liberalisation of the industry. Thus the new approach to airline regulation would no longer rely so heavily on bureaucratic whim or interpretation, would perhaps be more difficult to reverse, and would encourage and enable a longer-term response by the industry.

The overriding theme of the deregulation policy is competition. Maximum reliance is placed on the competitive market process to determine industry efficiency, air fares, price/quality options, network structure, and the financial fortunes of the airlines. However, while the policy is procompetitive overall, it is cautious in certain areas.

First, air safety maintains its high priority. The Act is specifically designed to guard against any deterioration of established safety standards. Concern was felt that expanded operations by commuters and newly certificated carriers might lower air safety. However, provisions were made for new safety standards for commuters as close as feasible to those of the certificated operators. Second, to allay fears that services to small communities would be terminated, the Essential Air Service Program guarantees essential air transportation to eligible small communities for a period of ten years. This program replaces the former local service airline subsidies scheme and is designed to provide small communities with access to the national system or to cities with close ties. Eligible communities include all those receiving air services in October 1978 and some of those whose services were terminated in the previous decade. Finally, the Airlines Deregulation Act has the explicit goal of preventing predatory and anticompetitive practices. It seeks to avoid unreasonable industry concentration, excessive market domination, and monopoly power.

## IV. DEVELOPMENTS SINCE DEREGULATION

### Exogenous influences

Economic analysis of policy proposals often utilises comparative static analysis. In such an approach the *ceteris paribus* assumption, i.e., that all other factors or parameters in the economic system remain unchanged, is important in order to isolate the effects of the policy proposal itself from other possible changes within the system.

In reality, however, it is unlikely that the *ceteris paribus* assumption will hold. This has certainly been the case in the US airline industry since deregulation. In particular, the industry has faced changes in input prices, fluctuations in the business cycle, and strikes and other stoppages. For example, the airline input prices index rose 105 per cent from the fourth quarter 1976 to 1981, compared with a consumer prices index rise of 62 per cent (Kahn, 1983:142). Fuel prices rose 230 per cent over the same period while interest rates doubled from 9 per cent in 1978 to 18 per cent in 1981. There were boom conditions and rapid growth in GNP in the US economy during the period 1977-1979, whereas 1979-1982 was characterised by recession conditions. Demand for airline services is closely related to general economic conditions. The air traffic controllers' strike in mid-1981 had an uneven impact on regions, airports, and carriers as it led to decreased landings and flight diversions to relatively unaffected airports. A lengthy strike at United Airlines and the grounding of the DC-10 aircraft also occurred in early 1979.

Thus circumstances within the airline industry have not been static and the effects of these changes are confounded with the impact of deregulation. While this makes it difficult to isolate precisely the effects of the policy changes, information is nevertheless available on the workings of a deregulated airline system under a variety of conditions. It also highlights the fact that any valid comparison between deregulation and continued regulation must be made under identical circumstances relating to exogenous influences.

## Fares and costs

There have been fundamental changes in the structure of air fares in the US since deregulation. In particular, the number of discount air fares and the sizes of discounts have significantly increased. Whereas around 20 per cent of air travellers flew with discount fares before deregulation, approximately 80 per cent were on discount fares in 1982 with an average savings of about 50 per cent (*Time*, 1983). While this may be consistent with increased price discrimination, it is generally believed that the more correct explanation is that air fares are now more closely related to costs of production.

Several observations give support to this explanation. First, short-haul, thin routes have become relatively more expensive than long-haul, dense routes. This reflects cost economies of longer stage lengths and increased market density allowing the use of larger aircraft. In addition, long, dense routes often tend to have a greater proportion of discretionary travellers. This tends to have an impact on relative route costs since it is more expensive to provide a regular, frequent, low load factor service

often required to cater for nondiscretionary travellers. Second, fares have been affected by an oversupply of wide-bodied jets, resulting from falling demand and increased fuel prices. This has especially affected long routes from which it is difficult to redeploy these aircraft. Price competition in the deregulated environment has resulted in fares below fully distributed costs. While such fares are unlikely to be sustained in the long run, they do reflect the decreased economic or opportunity cost of providing such services. This reduced opportunity cost is illustrated by the fall in resale value of wide-bodied aircraft relative to smaller jets, which occurred around 1980. Finally, the industry has seen the introduction of increased use of peak pricing. In any discussion of the relationship between fares and costs a basic point to note is, as illustrated by the above observations, that distance flown is not the sole factor determining the costs of airline service.

While both standard and average fares have increased in the years since the introduction of deregulation, there are grounds for suspecting that these rises were less than they would have been without deregulation. Price competition and the freedom to enter markets has encouraged existing carriers to increase efficiency by containing costs and increasing productivity. For example, airlines have increased the seating density in their aircraft, operated with higher load factors, and achieved greater aircraft utilisation. Kahn reports that the trunk airlines increased their seating density by over 10 per cent between 1976 and 1981 (1983:143), and that the average load factor of all certificated carriers was 60 per cent during the period 1977-1982 compared with 53 per cent during 1971-1976 (1983:144). The CAB reports average aircraft utilisation by the trunk airlines was 9.5 hours per day during 1977-1980 compared with 8.9 hours per day during 1973-1976 (CAB, 1982a). This was aided by network changes enabling more effective summer/winter use of equipment and increased average stage lengths (up 5 per cent between the above time periods). Carriers have also sought to lower costs by negotiating concessions on wage levels and work rules.

New entrants into the airline industry have stimulated increased cost efficiency. Cost differences of the order of 25-30 per cent have been observed between new entrants and established carriers (Kahn, 1983:140). These differences have been attributed to a less unionised workforce with lower wages and conditions and fewer senior staff (i.e., a breaking down of regulation exploitation by employees), and increased aircraft utilisation achieved by a variety of means including higher seating densities, the use of less congested airports, specialised 'no-frills' services, and the operation of single aircraft types and single flight segments rather than extended route patterns.

Changes in the quality of service (e.g. seating density and load factors) complicate attempts to measure the extent of any cost reduction achieved

after deregulation. However, one econometric study that allows for the changes in these aspects of airline service suggests that the costs of existing trunk and local service carriers were on average around 5 per cent lower in 1977 and 1978 than they would have been without deregulation (Kirby, 1984).

## Profits

In recent years the US airline industry has experienced severe financial hardship. Earnings have fallen markedly, in some cases to the point of bankruptcy (e.g., Braniff). However, it should be remembered that other industries and airlines in other countries have experienced similar results in this period. In addition, financial performance in the airline industry has varied greatly among airlines and over time. The average return on investment for trunk and local service operators was 8.8 per cent during the years 1977-1980 compared with 5.5 per cent during 1970-1976 (General Accounting Office, 1981).

The financial difficulties facing the airline industry can be traced to several factors:

a) the economic recession during 1979-82, which rivalled the worst since the depression. While demand fell overall, the recession had its greatest effects in leisure markets.

b) a rapid increase in fuel prices, which rendered many older aircraft virtually obsolete and increased the difficulty of redeploying larger aircraft.

c) management errors, e.g., the expansion plans of Braniff and Pan Am. It appears that carriers worrying about market shares performed relatively worse than those concentrating on profitability (Cohen, 1981).

d) deregulation, under which inefficient, high-cost airlines had increased difficulty competing.

e) the equipment legacy of the old regulatory system. For example, the trunk airlines, with around 35 per cent of their capacity in wide-bodied aircraft in 1978 (Graham and Kaplan, 1982:27), were less able to cope with deregulation and the exogenous pressures in the industry, as reflected in their relatively poorer financial performance.

## Network developments

Substantial changes have occurred in the US domestic airline network structure since deregulation (although statistical results relating to changes in network structure and services are very sensitive to the chosen

time period and therefore must be interpreted with considerable care). Many of these changes reflect a continuation of previous trends and responses to changes in the economy, e.g., changing business cycles and fuel prices. However, changes have probably been occurring faster than they would have under the old CAB regulatory system. This has been welcomed by many including the industry itself, which now has the scope to be more responsive and flexible in the face of exogenous shocks.

There has been a marked realignment of networks by carriers. Airlines are generally moving towards longer routes than those they have been operating. For example, in 1979 when trunk airlines operated with an average stage length of 659 miles, the average stage length of routes added to their networks in that year was 797 miles. The average stage length of routes deleted was 366 miles. For local service carriers the figures were 268 miles, 428 miles, and 181 miles, respectively (Lauriac, 1980). Such changes are closely related to the equipment legacy of the previous regulatory system.

While overall service seems to have improved, the changes have been uneven between states and between hub types. Large cities generally appear to have more service while smaller ones have less. For example, between June 1978 and June 1981 departures at various hub types changed thus: +11 per cent at 24 large hubs, +6 per cent at 37 medium hubs, −0.4 per cent at 70 small hubs, and −2 per cent at 480 nonhubs. Departures were up overall (CAB, 1982b). However, these quantitative measures tend to mask qualitative changes.

The consensus seems to be that the airline network is now better integrated and more closely matches desired traffic flows. There has been an increased use of major hubs and a de-emphasis on the use of secondary hubs. For example, in 1978 three out of 16 trunk and local service airlines operated more than 20 per cent of their departures from their leading city. In 1981 the figure was 10 out of 16 (CAB, 1983). Local service airlines have extended their networks to retain the traffic they previously fed into the trunk system. In 1981, 11 per cent of the local service airlines' flights were nonstop and longer than 1000 miles. In 1978 there were no such services (Graham and Kaplan, 1982:29). Thus, while roughly the same proportion of travellers made connections in 1981 as in 1978, the proportion travelling on the same airline increased 25 per cent. Better integration of the network is also reflected in an increased emphasis on direct flights. While the number of departures from non-hubs decreased between 1978 and 1981, the number of departures from these to large and medium airports increased in the same period by 3 per cent and 1 per cent, respectively (CAB, 1982b). This reflects increased access to major cities and fewer multi-stop, 'milk-run' services.

Looking specifically at small community service, there has been little evidence of wholesale abandonment of service or of a collapse of the

network. Commuter airlines have often been quick to replace any terminated services, although there was some initial resistance to certain disadvantages of commuter operations, e.g., lower altitude flying in small, unpressurised cabins. The 72 small communities abandoned by trunk and local service airlines between 1978 and 1981 enjoyed a 30 per cent increase in the number of flights available to them (Graham and Kaplan, 1982:30). Furthermore, subsidy arrangements under the Airlines Deregulation Act appear to be a more cost effective means of maintaining minimal service levels than the former local service airlines subsidy scheme. From deregulation until 1982 local service carriers dropped 56 destinations eligible for subsidy. However, only about half of these needed a subsidy under the Essential Air Service Program and the subsidy costs per airport were less than 50 per cent of those necessary under the former scheme (CAB, 1982a).

Cohen emphasises that the network restructuring to date has a significant transitional element to it. It largely reflects the equipment legacy of the old regulatory system (i.e., a glut of large and shortage of small aircraft) and an increased rate of aircraft obsolescence due to higher fuel prices. At any given point in time there is a finite supply of aircraft services determined by maximum fleet utilisation. Efficient use of the community's resources is made when this supply is allocated to its most profitable uses, although it implies that some profitable demand for services may, at that point in time, remain unsatisfied. This is the strategy under deregulation subject to the Essential Air Service provisions. However, in the longer run, when carriers have had the opportunity to adjust their fleet size and composition, all markets can be expected to receive service commensurate with demand.

**Industry structure**

Industry structure has changed considerably since deregulation. The former intrastate carriers have expanded their operations and new entrants such as Midway, People's Express and New York Air have emerged. These low cost carriers have been able to find sources of capital to finance their operations, which are often specialised, point to point, 'no-frills' services. The local service airlines have extended their activities by concentrating on holding their originating traffic. Their fleets have proved adaptable in the competitive environment, enabling them to move into trunk markets and retain control of feeder routes. The trunk airlines have tried to extend downwards since they can no longer rely on other airlines to feed their services. This has proved difficult for them given their fleet mix. Commuter airlines have increased their operations to smaller cities where they are replacing trunk and local service carriers.

Charter operators have generally performed poorly since their operations were mainly long-haul where there has been a glut of capacity, and they have a lower relative cost advantage compared with new entrants.

There is less concentration in the industry as a whole and in almost all market categories. Smaller carriers have been growing more rapidly. Between 1978 and 1980 trunk airlines' traffic grew 15 per cent compared with 33 per cent for the local service airlines and 42 per cent for other carriers. As a result the trunk airlines' market share of revenue miles performed declined from 88 per cent in 1976 to 79 per cent in 1982, while that of local service carriers grew from 8 per cent to 12 per cent over the same period (CAB, 1982a, 1983).

## Air safety

Air safety can be a very potent issue in terms of public impact. However, statistics regarding air safety must be interpreted with care since results can be altered dramatically by a single, tragic accident. Fortunately, in the years since deregulation, the industry has enjoyed some of its best safety results on record.

In 1980 the total accident rate for certificated carriers was 0.221 accidents per 100,000 hours, the best result on record. In 1982 the rate was only 5 per cent higher and the second best result of the last decade. In terms of fatalities per 100 million passenger miles flown, the average for the period 1977 to 1982 was less than half the average for the period 1971 to 1976. Similarly, in 1982 the commuter industry recorded the lowest total and fatal accident rates in the eight years for which statistics have been available (data from North, 1983).

The available evidence strongly refutes the exaggerated claims of some commentators that deregulation will necessarily result in a lowering of air safety standards.

## Summary

As with all regulatory changes there are both winners and losers. Groups tending to be worse off under airline deregulation include travellers and airport operators at some small townships, some high convenience travellers, employees of certain existing airlines, and poor airline managers. However, there are offsetting groups of winners including discretionary travellers, new employees, and efficient carriers.

Probably the most outstanding feature arising from the policy reform has been the dynamic nature of the industry when unimpeded by regulatory constraints. This is revealed by industry responsiveness to exog-

enous changes in its operating environment and its active pursuit of consumer patronage via cost reductions, innovative services, and diversity of choice. Deregulation has led to fundamental improvements in the US domestic airline industry through increasingly cost-based fares, network restructuring, and greater efficiency overall.

## V. IMPLICATIONS FOR AUSTRALIA

The experience of the US airline industry with both regulation under the CAB and the recent deregulation is highly relevant for Australia and offers several lessons to us. It provides important empirical evidence regarding the economics of airline markets.

Opponents of deregulation in the US put forward many arguments to justify their position, e.g., claims relating to wasteful competition, monopoly, destruction of airline networks, and reduced safety standards. The experience to date seems to refute their fears and gives credence to the procompetitive stance of many economic researchers of the industry. Similar arguments have been used in the debate over Australian airline regulation (for a discussion of this debate, see Kirby, 1981). In light of the US experience, supporters of our existing regulatory policies must now argue that a competitive market approach is not applicable in Australia, rather than that it is fundamentally deficient.

The Australian Two-Airline Policy is more restrictive than the former US regulatory framework. In particular, it exerts greater control on nonprice competition, especially with respect to capacity, which has probably resulted in a more desirable trade-off between flight frequency and load factors. However, its cost-plus pricing system in a market with restrictions on entry reduces incentives to be cost efficient. The Australian regulatory system can be criticised for its lack of competition, minimal innovation, poor consumer choice, and high costs and fares (Albon and Kirby, 1983; Kirby, 1979; Forsyth and Hocking, 1980). Certainly there appears ample scope for an improved economic performance in the industry.

In the US the legislative approach of deregulation was preferred to 'enlightened regulation' as the way to stimulate increased efficiency in the industry. A similar conclusion is likely for Australia. It is better not to rely on the whim or arbitrary interpretation of politicians and bureaucrats. Legislated deregulation reduces policy uncertainty, thus providing permanence and conditions more suitable for long-term planning. It also lessens the possibility for losers to regain dominance over policy. In addition, the major potential gain in Australia is likely to be increased cost efficiency, which is not so readily attainable through simple options available to regulators such as raising load factors.

The US experience indicates that bureaucratic direction is not an institution well adapted to coping with the dynamics of this industry. This is also the case in Australia and is well illustrated by the Australian bureaucracy's preoccupation with the concept of 'the national network' and by its desire to neatly categorise carriers and their tasks (Kirby, 1982).

It is important to appreciate that the direct relevance of the US experience to the Australian situation comes from the information it provides on the market process and the broad, qualitative nature of the likely results from a move to a competitive airline market environment — not from the precise details of the US market outcome. The US deregulation experience indicates that competition can work in airline markets. However, since conditions of both demand and supply differ between the US and Australia, it is unlikely that market outcomes will be identical in any precise, quantitative sense. Thus in a deregulated Australian airline market one should expect to observe levels of fares and costs, aircraft types and numbers, network route structures, and other features different to those occurring in the deregulated US system. In particular, it is important to note that the smaller absolute size of the total Australian market compared with the total US market does not necessarily invalidate the procompetitive approach in Australia nor the relevance of the US deregulation experience.

Events in the US also suggest several potential problem areas associated with deregulation in Australia. First, it is necessary to ensure that management of airport infrastructures, e.g., access to departure slots and terminal facilities, supports a competitive policy. Second, regulation of intrastate services should be compatible with Federal policy. Finally, labour union influence on new airlines is a possible stumbling block to effective policy reform. New and potential entrants provide an important source of stimulus to the deregulated industry. This may be frustrated if unions achieve dominance similar to that obtained under existing policies.

Finally, it must be remarked that the outlook for significant policy reform in the shape of deregulation does not seem favourable for Australia. There are several factors not so present in Australia that were important at the time leading up to deregulation in the US. These include greater scope for political entrepreneurs in the US political system (e.g., Senator E. Kennedy; see Weingast, 1981) and widespread dissatisfaction with government regulation in general and CAB activities in particular. When the Two-Airline Policy was last renewed in 1981 it appeared that the time may have then been appropriate for policy reform. There were several recent academic studies criticising the industry, critical public reports, unusually active agitation within government circles, and widespread coverage of the issues in the popular press (Kirby, 1979, 1981;

Forsyth and Hocking, 1980; Department of Transport, 1979; *Report of the Independent Public Inquiry into Domestic Air Fares*, 1981). However, the outcome was in many ways an even more restrictive policy. Although the recent change of Federal Government adds a further element of uncertainty, it seems unlikely that the Australian industry will see significant policy reforms in the near future.

# Selected References


Albon, R.P. and M.G. Kirby (1983), 'Cost-padding in profit-regulated firms', *Economic Record* 59(164, March), 16-27.

Bailey, E.E. and J.C. Panzar (1981), 'The contestability of airline markets during the transition to deregulation', *Law and Contemporary Problems* 44(1, Winter), 125-145.

Burckhardt, R. (1980), 'Two years of US deregulation', *Flight International* 22 November, 1982-1984.

*Business Week* (1981), 'Upstarts in the sky', June 15, 88-93.

Callison, J.W. (1980), 'Airline deregulation — only partially a hoax: The current status of the airline deregulation movement', *Journal of Air Law and Commerce* 45 (Summer), 961-1000.

Civil Aeronautics Board (1982a), 'Developments in the deregulated airline industry', 29 March.

Civil Aeronautics Board (1982b), 'Myths about airline deregulation', 29 March.

Civil Aeronautics Board (1983), 'Competition and the airlines: An evaluation of deregulation', January.

Cohen, M.S. (1981), Statement to Appropriations Hearings, US Senate, S181-12.5, 3 March.

Department of Transport (1979), *Domestic Air Transport Policy Review*, Volume 1: Report, AGPS, Canberra.

Donlan, T.G. (1980), 'Gaining altitude. Regional airlines outperform bigger rivals', *Barron's* 60(45), November 10.

Douglas, G.W. and J.C. Miller (1974), *Economic Regulation of Domestic Air Transport: Theory and Practice*, Brookings Institution, Washington, D.C.

Dubuc, C.E. (1979), 'Significant legislative developments in the field of aviation law', *Journal of Air Law and Commerce* 45.

Due, J.F. (1982), 'Major recent contributions to the literature of transport economics: A review article', *Quarterly Review of Economics and Business* 22 (4, Winter), 6-28.

Forsyth, P.J. (1981), 'US airline deregulation: An interim assessment', Institute for Fiscal Studies Working Paper No. 29, July.

Forsyth, P.J. and R.D. Hocking (1980), *Economic Efficiency and the Regulation of Australian Transport*, CEDA M Series No. 62A, Council for the Economic Development of Australia, Melbourne.

Frank, R.H. (1980), 'Productivity gains since deregulation in the airline industry: A survey of research in progress', April 24, unpublished.

General Accounting Office (1981), 'The changing airline industry: a status report through 1980', Report to the Chairman, Committee on Public Works and Transportation and its Subcommittee on Aviation, House of Representatives, June 1.

Graham, D.R. and D.P. Kaplan (1982), 'Airline deregulation is working', *AEI Journal on Government and Society (Regulation)* May/June, 26-32.

Institut du Transport Aerien (1979), *Impact of Deregulation on the Air Transport System*, Progress Report No. 1: The present impact of the regulatory reform on the US trunk airline productivity and profitability, September, Paris.

Institut du Transport Aerien (1980), *Impact of Deregulation of the Air Transport System*, Progress Report No. 4: Effects of liberalisation policies on US and European airports, 4.1 US Airports, Paris.

Johnson, L. (1980), 'Route exit regulation under the Airline Deregulation Act: The impact of fuel cost and availability', *Journal of Air Law and Commerce* 45 (Summer), 1029-1057.

Kahn, A.E. (1979), 'Applications of economics to an imperfect world', *American Economic Review* 69(2, May), 1-13.

Kahn, A.E. (1983), 'Deregulation and vested interests: The case of airlines', pp 132-151 in R.G. Noll and B.M. Owen (eds), *The Political Economy of Deregulation*, American Enterprise Institute, Washington, D.C.

Kaplan, D.P. (1980), Testimony before the Florida Reform Committee, Florida House of Representatives, March 18.

Keeler, T.E. (1978), 'Domestic trunk airline regulation: An economic evaluation', in *Study on Federal Regulation*, Volume 6: Framework for Regulation, December.

Kennedy, E.M. (1975), 'Airline regulation by the Civil Aeronautics Board', *Journal of Air Law and Commerce* 41, 607-636.

Keyes, L.S. (1980), 'A preliminary appraisal of merger control under the Airline Deregulation Act of 1978', *Journal of Air Law and Commerce* 46 (1, Fall), 71-100.

Kirby, M.G. (1979), 'An economic assessment of Australia's Two-Airline Policy', *Australian Journal of Management* 4(2, October), 105-118.

Kirby, M.G. (1981), *Domestic Airline Regulation: The Australian Debate*, Research Studies in Government Regulation 1, Centre for Independent Studies, Sydney.

Kirby, M.G. (1982), 'A critical examination of the Domestic Air Transport Policy Review', *Australian Economic Papers* 21(December), 309-320.

Kirby, M.G. (1984), 'Airline economies of 'scale' and Australian domestic air transport policy', unpublished.

Lauriac, J. (1980), 'Liberalisation policies at a time of world economic crisis', Institut du Transport Aeries Study No. 6.

Levine, M.E. (1965), 'Is regulation necessary? California air transportation and national regulatory policy', *Yale Law Journal* 74(8, July), 1416-1447.

Levine, M.E. (1980), 'Airline deregulation: An American perspective on the American experience', Address to the 1980 National Hotel and Restaurant Convention, April 24, Perth.

Levine, M.E. (1981), 'Revisionism revised? Airline deregulation and the public interest', *Law and Contemporary Problems* 44(1, Winter), 179-195.

McKinnon, D. (1982), Statement to Appropriations Hearings, US Senate, S181-12.14, 29 March.

Meyer, J.R. (1980), 'Transportation deregulation: Possibilities and prospects', *Journal of Contemporary Business* 9(2), 69-85.

Meyer, J.R., C.V. Oster, and J.A. Gomez-Ibanez (1980), *Early experiences with airline deregulation: Some implications for motor carrier regulatory reform*, Interstate Commerce Commission, April.

Meyer, J.S. (1982), 'Section 419 of the Airline Deregulation Act: What has been the effect on air service to small communities', *Journal of Air Law and Commerce* 47, 151-185.

North, D.M. (1983), 'Fatal airline accidents rose in 1982', *Aviation Week and Space Technology* March 7, 58.

Panzar, J.C. (1980), 'Regulation, deregulation and economic efficiency: The case of the CAB', *American Economic Review* 70(2, May), 311-315.

Pustay, M.W. (1979), 'Airline regulation and service to small communities', *Land Economics* 55(2, May), 253-268.

Rakowski, J.P. and J.C. Johnson (1979), 'Airline deregulation: Problems and prospects', *Quarterly Review of Economics and Business* 19(4, Winter), 65-78.

*Report of the Independent Public Inquiry into Domestic Air Fares* (1981), Volume 1: Report, AGPS, Canberra.

Styles, M. (1980), 'Commuter airlines and the Airline Deregulation Act of 1978', *Journal of Air Law and Commerce* 45, 685-709.

*Time* (1983), 'Turbulence in the skies', February 21.

Weingast, B.R. (1981), 'Regulation, reregulation and deregulation: The political foundations of agency clientele relationships', *Law and Contemporary Problems* 44(1, Winter), 147-177.

# Discussion

**Q:** The development of hubs was one of the results of deregulation in the United States. The way that they were described this morning seemed to indicate that they would be quite a significant part of the whole process within a deregulated Australian market. Where do you see the increased development of the these hubs, given the distribution of significant centres of population by Australian standards?

**Christopher Findlay:** It is enormously difficult to predict where hubs will develop. What I am trying to get is a structure for thinking about how the market is going to develop. Small communities are clearly concerned about what is going to happen to their service. We can say that in the US many small communities developed into hubs when more traffic was fed through. Through hubs we can see the economies of consolidating people on large aircraft and we can also see the effects on service from the small communities to the hubs. So some of their concerns may not be justified.

In a very sparsely populated region the hubs will be very difficult to predict and may take a long time to develop. Then perhaps the strategy to adopt if you are concerned about service to those communities is a direct subsidy to the airlines. You could do that if you had enough resources.

Or if you had enough research resources you could set up an experiment and design the least-cost network for Australia, but I'd say that was not necessary to do in advance because the least-cost network would emerge from the competition anyway.

**Michael Kirby:** Like Chris, I would not want to predict where hubs would develop. I'm not in the airline management business. In terms of smallness, there are some pretty small communities in the US too and it seems that all but the very smallest of them have received or are capable of receiving unsubsidised airline services. The CAB used to think that something like 40 passengers a day would support unsubsidised air services. So I think that for a lot of the small communities in Australia the prospect is there for the continuation or even extention of airline services under a more competitive environment.

**Q:** Michael, have you ever heard the reports I've heard that some of the entrant airlines in the States have been able to reduce their operating and labour costs by up to 50 per cent with new kinds of contractual arrangements with staff? What sorts of implications does this have for the likely fall in the average costs of airline services in Australia in a deregulated enviroment?

**Kirby:** In the US new entrants have been a very important source of competition and stimulus to the industry, and they have indeed enjoyed noticeably lower cost structures. One particular fear I might have in the Australian industry is that we would not necessarily get as much of a stimulus from new entrants here because the union movement in Australia might be more strongly organised and able to prevent new entrants from enjoying the salary reductions and less restrictive work practices that have occurred in the States.

I mentioned before some of the econometric work I've done. The figures are for the period 1971-78 and suggest that after allowances are made for things like number of airports serviced, load factors, average aircraft size, number of departures, proportion of freight to passenger services, proportion of scheduled verses unscheduled flights, fuel prices, and labour costs, the Australian industry has costs something like 55 per cent higher than the cost of equivalent operations in the US. So that is one reason why I feel that cost efficiency in the Australian industry is potentially one of the biggest areas of gain from a deregulated environment.

**Ray Ball:** Before I close this first morning session off I want to take Chairman's prerogative and make an observation myself in relation to the issue of hubs. I am not speaking as an aviation expert — I know very little about the industry at all — but as a person who spends a little time looking at markets and how companies and managers operate within markets. I'd have thought that Chris's illustration of the hubs could be treated as just one illustration of what has occurred in one geographic context as a result of allowing the creativity of market solutions to get running, of allowing entrepreneurs the scope to profit by serving people through entrepreneurship. I would not see it as necessarily saying that the same geographic structure would dictate the same solution in Australia, but simply as an example of what can happen when you allow people to be innovative with solutions. I think the answer to your question would be that in general we don't have to plan these things in advance. When market forces are operating we do not need to specifically say what the outcome will be in order to say that there will be gains from allowing innovation and creativity.

# Integrating Domestic and International Aviation

*Frank Gallagher*

**Frank Gallagher** is an economist who held a senior position with the Commonwealth Bureau of Transport Economics for four years from 1971 to 1975. Since 1975, he has been with the Co-ordinator General of Transport (formerly Director General of Transport) in Western Australia.

Mr Gallagher's present role is to develop policy and provide policy advice for the State Minister for Transport on air and sea transport. Over the past two or three years, Mr Gallagher has been particularly concerned with interstate airline policy and international liner shipping policy. He has been involved in shaping and presenting a variety of State Government campaigns aimed at improving the welfare of users of those interstate and international airline services that operate to and from Perth. In addition, he has been closely involved in the development of Western Australia's new internal (intra-state) air transport policy.

# Integrating Domestic and International Aviation

*Frank Gallagher*

## I. INTRODUCTION

The argument presented in this paper is not erudite, nor is it supported by a mass of skillfully manipulated quantitative evidence. It is based on a single idea — not a new idea, and at present a seemingly unfashionable one. Nevertheless, it introduces another dimension to the discussion of domestic aviation policy in Australia.

Basically, the idea is that we are discussing 'domestic aviation' and the Two-Airline Policy not because there is any natural or functional distinction between domestic and international aviation, but because there has been for many years in Australia an artificial and institutionalised dichotomy between them.

## II. THE ATTITUDE IN WESTERN AUSTRALIA

At this stage the reader may be apprehensive about being exposed to another boring litany on the 'unique problems' of Western Australia. That is not really what this paper is about; the issue has much wider implications. Nevertheless, the dichotomy between domestic and international airline services *is* discussed in the context of the nation's major transcontinental air route — that linking Perth with Melbourne and Sydney (and Adelaide) — and of the lesser transcontinental air route linking Darwin to the populated southeast corner of the continent.

It cannot be denied that some changes in air transport policy, particularly at the national level, have favoured transcontinental air travellers. However, in Perth most of the changes would be regarded as progress towards redressing a bias against the captive transcontinental air passenger — a bias that has been inherent in the evolution of the nation's air transport system.

The formation of the Independent Air Fares Committee (IAFC) did allow the States and others to present their cases regarding the domestic

airline system. And, in its August 1982 cost allocation review, the IAFC did respond favourably to the case put by Western Australia. It can no longer be claimed that there is a cost-based bias against long distance travellers inherent in the formulae used to derive standard economy air fares; nor can it be claimed that there is a cost-based bias against short distance travellers.

It cannot be inferred from this improved set of circumstances that the Government of Western Australia should have a long-term commitment to either the IAFC or an air fare formulae approach to setting air fares. Its policy attitude must spring from a concern for the lot of transcontinental air travellers. Now as in the past, commitment to institutionalised and cost-based air fare formulae rather than market-determined air fares rests on the following tenet: while Ansett and TAA are shielded from competition, the Federal Government has a responsibility to ensure that air fares reflect operating costs.

## III. CABOTAGE AND THE TWO-AIRLINE POLICY

What shields Ansett and TAA from competition is, of course, the Federal Government's Two-Airline Policy.

Within Australia, nearly all of the long distance passenger air transport is undertaken by regular and scheduled airline services operating on what are known as major domestic routes: that is, routes connecting the nation's major cities and towns. For 30 years the Two-Airline Policy has guaranteed Ansett and TAA exclusive access to these routes.

Many observers have pointed out that the Two-Airline Policy has continued unchallenged only because of the power of the Commonwealth to control the importation of aircraft under the trade and commerce power in the Constitution. It is suggested here that the unwritten (until 1981) Federal policy of segregating international from domestic carriers was also necessary for the maintenance and survival of the Two-Airline Policy. This policy of segregation was formally recognised in the tighter package of Two-Airline Policy legislation, which was ratified by the Federal Parliament in 1981. Domestic and international segregation was enshrined in the 1981 Airlines Agreement (Section 15 of the Schedule to the Act). Australia's international operator, Qantas, was not a signatory to the Agreement.

We are so used to this situation that questioning the segregation of internal and international airline routes may seem like questioning an article of faith. The dogma of airline cabotage in Australia prevents not only foreign international airlines but also our own international airline from operating on Australia's major domestic routes. We tend to forget that this situation is uniquely Australian. Within Europe a good deal of

long distance air transport is carried out by charter operators. In the United States domestic airlines operate on some international routes and vice versa. In Indonesia Garuda serves both domestic and international routes. In Canada the situation is similar, and so on.

## IV. DEREGULATION: IMPLICATIONS FOR WESTERN AUSTRALIA

Careful observers will have noticed that, despite the mood of dissension, the Government of Western Australia has never called for complete abandonment of the Commonwealth's Two-Airline Policy. There are practical difficulties associated with immediately dismantling the protection of the two airline system. Not the least of these is the present Two Airline Agreement Act, which has the force of law until at least 1986. However, these difficulties apart, the State has had good reason for a cautious approach to completely deregulating domestic airlines.

This caution in Western Australia has been caused by uncertainty about what the concept of deregulation really means in the Australian context, and what sort of system of transcontinental air services would emerge from total or partial deregulation of Australia's domestic airline system. There are dozens of possible scenarios for deregulation, but broadly they fall into two groups:

Scenario A: deregulation of domestic aviation, without allowing domestic and international traffic to mix; or

Scenario B: deregulation of domestic aviation, side by side with a policy that does away with domestic and international airline segregation.

If we look into the future to try to envisage what sort of system would emerge under each of these scenarios, Scenario A gives cause for much greater concern than Scenario B.

Under 'total' domestic deregulation that maintains cabotage, in other words Scenario A, we could end up with a monopoly airline or be stuck with the same old collusive duopoly, acting much as they do now but without the protection and blessing of government.

In this scenario many Western Australian travellers, businesspeople in particular, would be in the same situation they are in today. Their price elasticity of demand is low and they would continue to be captives in the airline market. The airline(s) would quite sensibly indulge in price discrimination. The mark-up on costs would be higher on the trans-continental routes than on short-haul east coast routes.

Transcontinental air fares would probably be set just low enough to discourage competition on this profitable route. Whether these fares would be lower than existing air fares is a moot point. In fact it is quite likely that they would be, but this is not a prediction that can be made with confidence.

Under total deregulation under Scenario B, transcontinental airline services would operate in an entirely different environment. The transcontinental route would become part of the international route network that hubs mainly on Singapore and on Sydney/Melbourne. The number of flights between Perth and Australia's east coast would fall significantly, simply because the route would be served by larger aircraft. There would still be a mix of aircraft types on the route, ranging from B747s to B737s. However, the accent would shift from B727s to larger aircraft like the B747 and the A300 Airbus. The frequency of service between Perth and Adelaide would probably fall significantly.

Under Scenario B, some interesting new route structures emerge. For instance, it is conceivable that there could be an Ansett B727-200 operating twice a week in each direction on the Perth-Jakarta-Singapore-Darwin-Alice Springs-Adelaide-Perth triangular route pattern.

Under Scenario B, there would undoubtedly be a greater range of lower air fares available for travel between Perth and the east coast of Australia. For first class and business class travel, fares would remain high. But, most importantly, consumers would encounter a greater range of fares and travel choices.

## V. IS THIS AN ISSUE NOW?

The cynics, particularly among the airline operating fraternity, might say why bother about this issue now. Qantas, who was apparently quite keen to get into domestic aviation two years ago, particularly on the major transcontinental route, now seems to have gone cold on the idea. Besides, the present series of Acts and Agreements effectively enshrines the two airline system until 1986, if not 1989. The present Federal Government does not appear to have a policy commitment to altering that legislation.

One possible reason why Qantas is no longer interested in domestic routes is that both Qantas and the two major domestic operators now find themselves with excess aircraft capacity. Amalgamating the two markets could only exacerbate that situation.

(There are two interesting reasons for this excess capacity situation. (1) It reflects a worldwide downturn in demand for air travel — which is, in turn, an effect of severe economic recession. (2) It is also a consequence of airline investment decisions made three or four years ago — the decisions by Ansett and TAA to get into wide-bodied jets. Thus they were

able to dangle those 'shiny new toys' in front of the then Federal Government as an irresistible incentive to ensure continued protection of the two airline system.)

Now is the time for the people in Canberra to start thinking seriously again about domestic airline deregulation. As Western Australians know from bitter experience, it can take years for acceptable ideas to become reality through policy implementation.

It should also be noted that when the present package of domestic airline legislation was unveiled in early 1981, an extensive public review of domestic aviation policy was promised. This review was to be completed by the end of 1985. Whether the present Federal Government has any commitment to carrying out that review is unknown. There have been no public pronouncements to suggest that it does. However, if it does have any such commitment the Federal Government must get the review underway some time in the next 12 months if its review findings are to be pertinent to a decision to either extend the present Two-Airline Agreement or allow it to lapse. The Western Australian Government will undoubtedly suggest in the strongest terms that such a review should seriously consider the impact of segregating domestic and international airlines on the two air transport corridors that link Perth and Darwin to the populated southeast corner of Australia.

If such a review is not imminent, then perhaps this issue is one to which some relatively erudite organisation, such as the Bureau of Transport Economics, could focus its considerable research resources over the next two or three years.

# Airline Costs, Revenues and Profit During a Recession

*P.J. Forsyth*

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## I. INTRODUCTION

Domestic airlines in Australia are recovering from a difficult period. Trans Australia Airlines (TAA) made a loss in 1981-82 and 1982-83's result was much worse. Ansett also recorded a worse financial performance for 1982-83 than for 1981-82. Traffic not only slowed but actually fell, and airlines normally plan for growth even in poor years. Regional as well as trunk airlines were affected, and commuter airlines were possibly the worst affected of all, although little financial information is available except for the trunk lines (Qantas, the international carrier, is also affected but is not considered here).

In this paper the nature of airline costs, revenues and profits are examined in general terms. This provides the basis for a discussion of profitability and pricing under deregulated and regulated environments. The final section assesses the significance of airline losses and policy responses to them. This is particularly relevant for the industry's closest regulator, the Independent Air Fares Committee (IAFC).

## II. THE VARIABILITY OF AIRLINE COSTS, REVENUES AND PROFITS

### Costs

There is very little information available on how airline costs vary in response to short term traffic changes. This reflects the fact that demand growth is the norm, and that it is usually easier to adjust to reductions in the rate of growth than to actual falls in traffic. It is sometimes tritely asserted that the short run marginal costs of airlines are low because load factors (the percentage of seats or capacity filled) are rarely 100 per cent. In fact, for an efficiently priced airline short run marginal costs will equal

the price that covers costs and yields a 'normal' profit (that is, there is little evidence of economies of scale). The question is: what happens to marginal cost when output varies from the levels for which long run decisions were made (i.e., planned output levels)?

Economists have said little on this question because the data needed to resolve it are not usually available outside the firm (recent US experience provides some observations, unreliable though they may be). Most discussions of airline profitability concentrate on the demand side and assume that costs are flexible (Miller, 1977). This may be approximately true for different levels of growth, but it is unlikely to be true for falls in output. We cannot get round the problem by classifying costs into 'fixed' and 'variable' and assuming that the fixed costs must be incurred. The distinction between fixed and variable costs depends on the period being planned for (Alchian, 1959). Thus an airline's response to a five per cent drop in traffic for six months depends on whether it expects the drop to continue for the next six months, the next year, two years, or however long. Obviously it will adjust more for changes that are expected to be long lasting.

By and large, airlines are likely to believe that downturns in demand will be shortlived. If traffic growth is expected to be high in the future, airlines will not wish to reduce their capacity to serve it by very much. Costs will thus be relatively insensitive to current traffic but will depend on planned traffic levels, and they may be difficult to reduce on short notice. It is not easy to alter capacity, especially if it means buying aircraft in a boom or selling in a slump. (This, of course, need not be the case with Australian airlines, because Australian traffic cycles need not correspond to US or world cycles.) Many nonaircraft costs are related to **available** aircraft capacity, not capacity in use. The number of trained flight crew and the size of maintenance and serving facilities will depend on capacity. Costs are likely to be relatively invariant to traffic when only brief changes are anticipated.

While capacity may be fairly fixed, the rate at which it is used need not be. Fewer flights may be scheduled, fuel may be saved (20-25 per cent of total airline costs), and other materials need not be purchased. However, the presence of fixed costs and marginal costs that fall below average cost when traffic is below forecast levels will mean that load factors fall in a recession. This will happen in regulated and unregulated markets. Recessions viewed as temporary introduce another complicating factor. Airlines may be unwilling to reduce their use of capacity as much as would be economically warranted because they fear losing a long term competitive advantage to a rival, especially on thin routes. This also reduces the flexibility of costs.

The foregoing arguments suggest that in the short term airline costs in Australia may be fairly fixed. Short run marginal costs may vary widely

with economic conditions, but in practice airlines do have some scope for adjusting capacity possessed or operated. Recessions are spurs to greater efficiency, so adjustments are likely to occur then.

### Revenues

The revenue side is straightforward. Demand for airlines is quite sensitive to overall income changes and responds quickly to them. Most evidence points to an income elasticity in excess of unity, and this means that downturns in the economy will lead to magnified downturns in airline demand. This will be true of both business and leisure demand. The traffic downturn in 1982-83 was a predictable result of the recession in Australia.

### Profits

Some industries have low profit margins, but total costs vary widely and demand is fairly stable (for example, the retail food industry). Others have inflexible costs but high margins (for example, retail fashion clothes). In the airline industry demand is highly variable, or at least sensitive to economic conditions, costs are relatively inflexible, and profit margins are low — on average around two per cent. All of this suggests that profits would be quite volatile. To examine this question we need to look at pricing. Regulated and deregulated markets will differ in this respect because of different pricing arrangements.

## III. PRICES AND PROFITS UNDER DEREGULATION

In a deregulated market there is little to stop profits from being volatile. Prices will tend to be set at short run marginal cost; thus they will fall during recessions and rise during booms. What this means for profits depends on demand elasticity. If demand elasticity is around unity (which it may be in the short run; see Trans Australia Airlines, 1982) or less, the price fall will add nothing to revenue, though it will increase costs (because traffic will be higher than if prices had remained constant). It is possible, however, that if demand is highly elastic (in the short run) lower prices may moderate losses.

Thus, in a deregulated environment, profits will tend to be more volatile than if prices were kept constant or manipulated to preserve

profitability. Traffic, on the other hand, will be less variable, as its fall will be moderated by the fall in price. From an allocative efficiency point of view, this is a good result. When capacity is underutilised, there will be pressures to use it. Likewise, when capacity is in short supply it will be rationed efficiently. But airline profit volatility does have a cost. It increases the risk associated with the firm, which in turn increases the firm's cost of capital. The cost increase need not be great since the volatility is predictable and quite systematic. (For this reason, lenders are willing to lend money to US airlines that have been making big losses.)

Airline deregulation in America happened during a boom in the US economy, and then the most severe recession since the Second World War. For a time profits reached record levels, and they were followed by record losses. Neither, as such, was the product of deregulation (whatever its supporters or opponents may claim). Deregulation probably increased the volatility of profits, but not the average level of profits (Forsyth, 1981). The recovery is providing a test of this. Already airline profits are increasing sharply. Traffic has been higher than it would have been if Civil Aeronautics Board regulation of fares had been maintained.

Commuter airlines are less regulated in Australia than trunk airlines as to entry and, effectively, prices. They may have more variable costs than trunks (they can sell aircraft and lay off employees more easily), though demand is probably just as sensitive to economic conditions and profit margins are low. The commuter airline industry has been having a difficult period, and individual operators have been forced to leave.

## IV. PRICES AND PROFITS UNDER REGULATION

It is possible under regulation for prices to be raised in a recession to protect profitability and held down during a boom to restrict high profits. Regulation of prices, especially when backed up by regulation of capacity, makes it possible for the regulator, possibly jointly with the industry, to choose any price. Hence price regulation essentially creates a monopoly. This monopoly power need not be used, but there will be strong pressure from the industry for countercyclical prices to even out profits. Often regulators will see their job as ensuring that prices are set at (average) costs for each individual year or period. This implies raising prices in the recession.

The Australian airlines have had a remarkably even history of profitability, especially since 1960, which cannot be explained solely in terms of consistent growth in the economy (Holcroft, 1981). A pattern seems to have developed. When demand growth falters, as it did in 1975, prices

rise in real terms (or relative to airline input costs), and as demand expands they fall. If the allowable prices are set according to average cost, they will rise during recessions. Average cost appears to be what regulators have used as a guide.

The consequences of this policy are magnification of the swings in traffic and lower allocative efficiency. Just at a time when capacity is readily available, its utilisation is further lowered. This may not matter if the fall in demand is slight, but for moderate or large falls it will have a big effect. Suppose demand falls by 5 per cent and the elasticity of demand is unity. Suppose further that 50 per cent of an airline's costs are variable within the period being considered. If costs are to be covered, real prices will have to rise by 5 per cent and output fall by 10 per cent. Protecting profits has doubled the downturn in traffic.

Regulation need not lead to completely stable profits. Indeed, costs may be so inflexible and demand so elastic that total stability is not possible. Regulation can be used to reduce the volatility of profits, but the cost of doing this is increased volatility of demand and lower allocative efficiency. These costs could be significant. To measure them we need to take a base situation. Suppose we assume constant prices. (Of course, this is not an ideal policy since prices ought to vary with demand to achieve efficiency. See section III.) As a rough indication, the allocative losses from a 5 per cent reduction in traffic due to higher prices, with unitary elasticity of demand, could be around 0.25 per cent of industry revenues. In Australia, these are currently well over $1000m per year. Put slightly differently, to avoid a loss of $25m being incurred by the industry the regulator would have to impose a loss of $27.5m on consumers. Larger traffic falls would imply more than proportionately larger allocative losses if regulation serves to keep profits even. Would the airline industry be prepared to pay the government upwards of $2.5m to keep its profits even (but no higher)?

If profits are to be protected during a recession, the most efficient way of doing so is through discriminatory pricing, or cross-subsidisation of one group of passengers by another. This is another example of the Ramsey-Boiteux solution to the pricing problem when costs must be covered (Baumol and Bradford, 1970). It is a second-best solution to be used when the best solution is not available. In the airline context it would be fairly simple to implement. Prices for price sensitive (probably low fare, leisure) travellers would be set at short run marginal cost, and prices for price insensitive groups (e.g., business travellers on full fares) would be raised to cover costs. There would be only a minimal reduction in overall traffic. To a degree, by introducing no-frills fares and simultaneously pushing economy fares up the Australian airlines are adopting this second best policy.

## V. AIRLINE LOSSES: CONSEQUENCES AND POLICIES

Airline losses are to be expected for some periods. Individual airlines may be able to avoid losses by good management and good fortune, or to disguise them by use of creative accounting techniques. It is important to see the probable losses for what they are — the response of a sensitive industry to a recession. Any proposed policies to deal with such problems should take account of this.

Losses are not necessarily a sign of inefficiency or poor management (though both could be present). Since airlines rely to a degree on different markets (business, leisure) and operate different types of fleets, they may be differentially sensitive to the recession. Thus, a better financial performance by one airline need not indicate greater efficiency (though this could be present). Losses are not the result of re-equipment programs, though they may have been made worse by the timing of the arrival of new capacity.

It is possible that airline accounting techniques will make losses seem greater. Airlines depreciate their aircraft in the books more rapidly than their market value falls. Thus, when they sell aircraft they make an 'abnormal', though entirely predictable, profit. Soon after a re-equipment program depreciation provisions increase sharply, by rather more than the true economic depreciation. Profits are thus understated. Later, when the aircraft are older (as was the case in the late 1970s), profits are be overstated as depreciation expense falls (because the aircraft have already been written off). As both major airlines, and especially Ansett, have been purchasing new aircraft recently, profits over the next few years will tend to be understated (and losses overstated) if current accounting practices are maintained.

Periods of losses often induce industries to strive to cut costs and increase efficiency. If their profits are protected they have less incentive to do this. There are probably gains to be made if the Australian airlines seek to improve their production efficiency. A good example is British Airways. This airline made very large losses owing mainly to external factors, such as the high value of the pound (and not to US deregulation). This prompted a cost reduction exercise that is significantly improving efficiency and competitiveness.

From the policy point of view, the Independent Air Fares Committee has a difficult task. If it tries to ensure that fares are set at average costs it may appear to be conforming to its terms of reference. Yet this would hardly ensure that air services were being operated on an 'efficient and economic basis', as it would increase the variability of demand and encourage allocative inefficiency. Alternatively the IAFC might seek to achieve efficient pricing, which would induce greater losses for the airlines in some years and greater profits in others. But it is far from

obvious how the IAFC would obtain the data needed for efficient pricing. It might seek to steer a middle course by trying to keep real fares constant, or by relating fares to an input price index. It would then be putting some of the burden of fluctuations on to the airline.

The other policy problem the IAFC must face is the structure of air fares. The best way to preserve airline profitability during a recession is to allow some price discrimination. Given its terms of reference, the Committee may find it unpalatable to approve of a situation where one group of passengers is required to pay more so that others can have lower fares. This group would be paying more than its costs, in that service could be supplied to them more cheaply if other passengers were not being served at a lower price. (In boom periods, on the other hand, the price insensitive group would have to be charged less than cost if abnormal profits were to be avoided.)

Once one inefficient rule has been adopted, it no longer follows that other normally inefficient practices are undesirable. For example, price discrimination and cross subsidisation may be the best available ways of correcting the problems caused by rigidly adopting a 'revenues cover costs' rule. Devising and implementing an efficient fare structure in normal times is difficult. When boom and recession alternate, the problem of regulating an efficient fare structure becomes even more complex and difficult. If the main purpose of price regulation is to prevent airlines from using the monopoly power created for them by the Two-Airline Policy, it may be preferable to replace it with rate of return regulation, as is often used in the US.

# References

Alchian, A. (1959), 'Costs and outputs', in M. Abramowitz (ed)., *The Allocation of Economic Resources*, Stanford University Press, Stanford.

Baumol, W.J. and D.F. Bradford (1970), 'Optimal departures from marginal cost pricing', *American Economic Review* (June), 265-283.

Forsyth, P.J. (1981), *US Airline Deregulation: An Interim Assessment*, London: Institute for Fiscal Studies Working Paper No. 29 (July).

Holcroft, W. (1981), *Domestic Air Fares Report of the Independent Public Inquiry*, Vol. 1, Australian Government Publishing Service, Canberra.

Miller, J.C. (1977), 'The effects of the administration's draft bill on air carriee finances', in P.W. McAvoy and J.W. Snow (eds.), *Regulation of Passenger Fares and Competition Among the Airlines*, American Enterprise Institute, Washington, D.C.

Trans Australia Airlines (1982), 'Submission to the Independent Air Fares Committee', *Cost Allocation Review*.

# Discussion

**Q:** What is your reaction to the suggestion that perhaps IAFC doesn't so much seek to even out profits as to reduce the volatility of profits? As we understand it their approach is in fact not to allow the same rate of profit in a recession as in a boom, but to apply varying rates of return depending on how they see the current economic circumstances.

**Peter Forsyth:** What I suggest is that it is not so much that they try to make it perfectly even, but I do suggest that they lop off profits in the good years and shore up the airlines in the bad years. I am really not quite sure what the exact trade-off is, because they do draw the line somewhere. But my impression of previous regulators in the Department of Transport and my impression of the IAFC at the moment is that they are certainly to an extent trying to lower the volatility of profits and it would be interesting to know just exactly how far they would go on that.

**Q:** Frank, has the new government had occasion to prepare its position on the particular policy issue that you addressed?

**Frank Gallagher:** I think you can take it that the new government's view is very much the same as the old government's view. They have certainly made noises about it, but without being as specific as the previous government was. I am sure they will become more vocal over the next few months. I think they are sitting patiently waiting to see how the new 45 per cent discounts pan out, how available those discounts will be, and what effect they will have on traffic.

**Q:** A question for Peter Forsyth about the IAFC. As I understand, what you said is that the best step would be to move from an average cost pricing system to a more market-based pricing system, and the second best would be to some form of fare discrimination. Could you explain how you see the IAFC has the scope to indulge in market-based pricing or fare discrimination when it has direct control only over economy fares. It seems to me that you have got to have control over discount fares to achieve those things.

**Forsyth:** It's difficult because it's all a bit vague what actual power the IAFC has. For example, there are things written in about how in approving discount fares it should check to see that other passengers are not disadvantaged. If you argue it strictly, some passengers will always be less well off with one set of structures as compared to another set, under

which other people will be worse off. The real question is how much freedom the IAFC has in interpreting its terms of reference, and that can only come out with time.

I think part of the problem is that quite often, especially given its terms of reference, the IAFC has to square the circle. There are references to costs being covered, and there are references to efficient and economic fares, but the two don't necessarily come together. Over the long term they might but particularly during economic swings like a recession or a boom there might be times when marginal costs, say, are well below average costs. That's probably the situation at the moment. Efficient fares should equal marginal costs — in other words, the airlines would be allowed to make a loss. Of course there might be a constraint imposed that the airlines cannot make a loss, or at least that any loss will be moderated.

If that is the aim, what I suggested is that rather than just raise all fares proportionally, it might be preferable to minimise the overall impact on traffic. To do that you would try to find the categories least sensitive to price and load them, and find the categories most sensitive and give them prices approximately equal to marginal cost. In other words there is a loss being made but business traffic perhaps pays for that loss. Likewise, in a boom period it might well be that business fares tend to come down.

I am not suggesting that as being the best of all possible policies. But if you do want to moderate swings in profitablity that might be a better way of doing it even though it seems to be discriminatory or involve cross-subsidisation of one group by another. In terms of allocative efficiency that might be better because it minimises, for example, the extent to which capacity utilisation is cut down by insuring that airlines cover costs.

**Colin Gannon:** I'd like to follow that up a bit. Under the current regulatory arrangement and the legislation that is in place (which the IAFC is somehow obliged to find its way through without a terribly good legislative broker) some very complex questions are raised with regard to fare structure and fare level. As with many pieces of legislation in this area, there are all sorts of potential and natural conflicts. There is in the IAFC Act an obligation on the part of the Committee to have regard to the cost base. In approving discount fares the Committee should ensure (I have forgotten the exact language) that they do not lead to increases in economy or core fares.

Two quick points on that. First of all there is nothing sacrosanct about the existing levels of core fares. There is perhaps the psychological aspect, which Kevin Cairns [member of IAFC] has raised, that people would regard any change, particularly if it was an injurious one, as bad

news. But there is a bit of a way out and that is that we have got an industry where there is a fairly extensive network of joint costs. The IAFC is obliged under the cost allocation review to somehow deal with those under the heading of residuals. A potential way out on economic grounds with regard to the legislative provisions would be to address whether the existing economy core fares are 'cost-based' or 'efficient'.

**Forsyth:** Just following up on Colin's comments, I agree that this is an area of doubt that can be taken advantage of. The only query might be that you can't have one rule one year and then the next year change completely the bases of allocation because there is a recession. So the freedom to manoeuvre, particularly over time, isn't that great.

But the question arises, what exactly is an economic fare? We can sketch certain aspects of it, but there are all sorts of problems in actually measuring incremental or marginal cost and so forth that are quite complex and become more complex during booms and slumps. Economists can paint a broad picture of what the position is or what the structure would be, but often they can't go much further than a broad picture because it becomes fairly difficult when somebody says what about this sort of fare or that sort of fare — is it too high or too low? That is a really difficult question to answer given the information available.

**Q:** I have a question for Peter Forsyth, about your conclusion that perhaps the IAFC should be looking more at rate-of-return-based pricing, as they are in the US. As you are probably aware, there are a lot of drawbacks with that approach. There is the well-known result that firms have the incentive to change the base at which the rate of return is worked out by increasing their degree of capital intensity. When the rate of return approaches the competitive cost of capital then incentives for cost minimisation almost entirely disappear. It is possible to achieve a given rate of return with efficient costs or twice those costs or ten times those costs. Moving in that direction will not necessarily improve the present situation, and it may make it worse than it already is. And it seems to me that it doesn't really change things but just continues the present policy. If the IAFC were to insist on a uniform rate of return instead of averaging it over the business cycle, it might introduce even greater instability in other factors while stabilising prices. Moving to that sort of solution would mean looking at some long-term average rate of return rather than at the short-term rate of return, and it is not clear to me that the committee would do that.

What we really have to address are market-based measures that will get rid of some of the present incentives for cost padding, and it is not clear that the rate of return is the way to go about doing it.

**Forsyth:** I take your point and I'm not advocating rate of return regulation. We have a sort of implicit rate of return regulation at the moment, with price regulation trying to do the job of rate of return regulation. This was what happened with the Civil Aeronautics Board in the US in years gone by. In general in cases in the US some rate of return is set as being an allowable rate of return. And indeed we've got one example of this in Sydney in the Australian Gas Light Corporation. They are told that they may earn no more than a given rate of return, and there are all sorts of problems with AGL.

**Q:** What essentially is your policy on intrastate air licensing with the use of your new scenarios?

**Gallagher:** As you probably know, the previous government in WA had set in motion a progressive deregulation of intrastate aviation and the present government is continuing that. So I don't foresee any objection to having intrastate flights that also operate internationally — for instance a flight from Perth to Port Headland to Bali. I think the Government would actually welcome them.

**James Kimpton (Ansett Transport Industries):** It might be worth making the observation from ATI and Airlines of Western Australia that we would like to get into regional overseas services from Western Australia by means of Airlines of Northern Australia out of Northern Territory. And we pursue wherever we can the opportunity to do that, either by making appropriate arrangements with Qantas or whatever opportunities arise.

# Regulatory Change and Competition in the South Australian Airline Market

*David Starkie and Margaret Starrs*

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## I. INTRODUCTION

The airline market in South Australia experienced a substantial relaxation of regulation in 1979 as a result of a Commonwealth Government decision not to hinder the orderly development of competition in regional air transport (Bureau of Transport Economics, 1981). The change of policy was manifest in a greater willingness to sanction regular public transport (RPT) services by small aircraft operators holding charter licences and to approve applications from operators proposing to compete with established airlines on regional routes.[1]

In the majority of States this development has been of little consequence. In Western Australia, Queensland, New South Wales, and Tasmania, separate State power to regulate intrastate aviation exists and has been used to this end; only South Australia and Victoria do not have such regulation. With the new approach at the Commonwealth level, both States present an opportunity to analyse how airline markets work in an environment of minimal regulation and how incumbent firms react to the change of policy. In both cases the operating environment provides a good basis for testing theory. The overall size of each market is limited and there are a number of low demand or 'thin' routes. In addition, in the South Australian network there is a considerable range of stage lengths.

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1. Operators are still required to submit proposals for reasons of air safety. A benign approach also appears to have been adopted thus far by the IAFC, which has had explicit powers of approval with respect to fares since late 1981.

This paper analyses what has happened in South Australia since 1979, emphasising how firms are reacting in the more competitive environment. Although the thrust of the paper is empirical and descriptive, in section II we set out the new theory of market behaviour. We believe this theory is pertinent to an explanation of what has happened. In section III we analyse in broad terms the current South Australian position. Section IV focuses on developments during the last four years. Finally, in section V we consider the general performance of the South Australian industry in light of the theory.

## II. A BRIEF REVIEW OF THEORY

The major contribution of the 'new' theory of contestability has been to show that the structure of an industry — the number of competing firms — may have no bearing on the degree to which production will be efficient and welfare maximised. Traditional theory has assumed otherwise. As Baumol points out, the received theory of market behaviour tends to view efficiency in resource allocation as a monotonically increasing function of the number of firms in an industry, with unregulated monopoly and perfect competition representing polar cases (Baumol, 1982). Conversely, the need to regulate to achieve an efficient price and output combination is seen by received theory to vary inversely with the number of firms: in an industry inclined towards pure monopoly (because of a limited market and substantial fixed costs leading to economies of scale) regulation is considered essential.

In contrast to this conventional viewpoint, the new theory of industrial structures revolves around the idea that the competitive pressures required for an efficient solution can come equally well from outside an industry. The key is an ability to contest for a market rather than to compete within it. This ability to contest depends upon how costly it is for a firm to enter and exit a market, which in turn depends upon whether the capital required is mobile or irretrievably committed to producing a particular product.

It is now recognised that the power of a firm to extract monopoly rents depends upon the extent to which production stems from immobile capital, that is, the extent to which the fixed costs of production are also 'sunk' costs. Sunk costs are one-time costs facing a potential entrant; they do not have to be paid again by the incumbent. To the potential entrant they constitute a barrier to entry. On the other hand, if all capital is saleable and reusable in alternative markets without loss (other than that corresponding to normal depreciation in use) a potential entrant to an industry can then replicate, without penalty, the cost and output vectors of the incumbent firm(s). Consequently an industry without sunk costs —

even a natural monopoly industry — is said to be perfectly contestable because the possibility of entry by rival firms is a constant threat.

The ability to contest a market in these circumstances has a number of important consequences in terms of welfare. First, a contestable market in long-run equilibrium never offers more than a normal rate of profit. The existence of (temporary) supernormal profits will attract rival firms willing to offer the same output at lower prices. Consequently, monopolists in perfectly contestable markets will earn zero economic rent. Second, production inefficiencies also will be totally absent in long-run equilibrium; unnecessary costs (like abnormal returns) constitute an invitation to entry. Third, in long-run equilibrium no product produced in a contestable market can be sold at a price less than its marginal cost. A price less than marginal cost will allow a rival firm to enter the market and offer a smaller output at a slightly lower price and yet, by eliminating the unprofitable marginal unit, earn at least as much as the incumbent. Consequently, cross-subsidies and predatory pricing practices are infeasible in the long run. And fourth, if a market contains two or more firms, again in the long run, prices cannot exceed marginal costs.

The only contrary note in terms of conditions required for maximising welfare arises in the case of a monopolist. It may be possible for a monopolist's price to exceed marginal cost. The reason for this is that an attempt by an entrant to sell a greater output at a (lower) price equal to marginal cost may be thwarted by a low elasticity of demand so that there is no price covering marginal cost at which the market will absorb the additional output. Nevertheless, even though price may exceed marginal cost, a monopolist when strongly threatened by a potential entrant will be inclined to adopt prices that reflect what the market will bear (*i.e.*, Ramsey-optimal prices). Therefore, as Baumol remarks, a contestable market offers us some presumption (but no guarantee) that a monopolist, required to cover total costs from revenues, will behave in a manner consistent with a second best optimum — that is, that inefficiencies will be minimised.

Of course, a problem may arise if it is not possible for the monopolist to price in excess of marginal cost. In these circumstances, a natural monopoly that is contestable may no longer be sustainable — meaning that there is no price and output vector such that entry by a rival firm is unattractive while all demand is satisfied and revenues cover total costs of production. A necessary but not sufficient condition for sustainability is that average costs of production fall as output expands. However, if average costs first fall and then rise with output, such that the demand curve cuts the average cost curve in its rising section, then natural monopoly is, unequivocally, not sustainable; it will be possible for a rival firm to enter the market and produce a more limited output at a lower cost (we are using Panzar and Willig's 1977 definition of a natural monopoly

as a firm that is the sole seller of a set of goods whose technology makes single firm production cheaper than any alternative). As a consequence, either total costs of production will be raised (if total market demand is to be satisfied by more than one firm) or consumer welfare will be reduced by restricting output to a suboptimal level. In circumstances where the monopolist is also a multi-product firm (for example, selling its output in different spatial or temporal markets), the issue becomes more complex. A multi-product monopolist may be able to sustain prices in all its submarkets or only in a few or them. Thus, although the theory of contestability has reduced considerably the case for price and entry regulation in decreasing cost industries with few sunk costs, it has not, on the other hand, eliminated the case for intervention.[2]

The case for abolishing price and entry regulation in the airline industry appears to rest on two propositions. First, the airline industry is contestable: sunk costs are small and are not a serious barrier to entry or exit. Second, if conditions in a particular airline market favour a natural monopoly, then the monopoly (besides being contestable) will be sustainable at prices that cover the firms' average costs and at output levels that fully satisfy the demand for air travel. The first of these two propositions has received considerable support in the writings of Elizabeth Bailey, Vice-Chairman of the US Civil Aeronautics Board (Bailey, 1981; Bailey and Panzar, 1981). Her case is that there is no reason, *a priori*, to expect economies of scale with respect to size of aircraft to lead to substantial barriers to entry because airline capital costs, while substantial, are not sunk costs. The chief sunk costs in aviation — runways, ground facilities, and air navigational aids — are incurred as a rule by governments and not by airlines (nevertheless, governments can and do try to recover such costs from 'rental' fees). The second proposition, however, appears to have received less attention in the specific context of airline (de)regulation.

Next we examine this theory by referring to the South Australian airline market. Specifically, we consider the case advanced by a former executive director of aviation at Ansett Transport Industries that the costs of developing routes could constitute an entry barrier and that fares will differ according to the degree of competition in the market (Pascoe, 1983). We also consider how the structure of the South Australian industry has changed since entry policy was revised in 1979 and how a route monopolist has reacted to entry by competitors.

2. There is also the issue of increasing returns to users from enhanced service frequency with the result that an efficient solution may require subsidies even if the airline industry is subject to constant returns to scale (see Forsyth and Hocking, 1978; Findlay, 1983). We do not consider this issue in this paper.

## III. COMPETITION AND THE SOUTH AUSTRALIAN MARKET

In May 1983, 11 South Australian based operators were operating RPT services within the State. Among them was Airlines of South Australia (ASA), an operating division of Ansett Transport Industries Limited. ASA operates under an airline licence (the only one to do so)[3] using F27s. The rest of the South Australian aircraft fleet is made up of different types of small aircraft, with the eight-seat Cessna 402s being the most commonly used. The largest aircraft operated under the Supplementary Airline Licence is the 15- to 18-seat Bandeirante used on selected services by two operators (Commodore and Trans Regional). The majority of operators use a mix of two aircraft types as shown in Table 1. Five operators (Eyre Charter, Albatross, Emu, Opal and Skytours) fly a single route; in the case of Albatross and Skytours it is a simple end-to-end route with no intermediate stops. The largest number of SA routes operated by one 'airline' is six (Commodore); ASA and O'Connor's fly four and Rossair and Trans Regional Airlines three each.[4]

The route structure is strongly focused upon Adelaide with all routes having Adelaide as the hub. In other respects, the network defies easy generalisation. It is complex and subject to change. In the middle of 1983 there were 32 ports on the commercial network.[5] These are shown in Table 2, which also lists the number of flights per week from Adelaide to each port. Thirteen of these were served by more than one operator. The ports served by the largest number were Kingscote and Port Lincoln with five operators each, Whyalla with four operators, and then Ceduna, Broken Hill, Mount Gambier and Port Pirie with three different operators each. However, once the agreement between ASA, O'Connor's and

3. The alternatives are Supplementary Airline Licences, introduced 1 February 1983, and exemptions under *Air Navigation Order* 203(1). The former is in the process of replacing the latter and by February 1984 all RPT Services not operated under a full airline licence will operate under a supplementary licence.

4. Both Rossair and O'Connor's have agreements with ASA. Rossair appears in ASA's timetables and its Cessnas are hired by ASA on a charter basis to operate these services. O'Connor's main business is a freight contract flying bank computer tapes into Adelaide on a daily basis; passengers are embarked at 'ports' serviced by ASA only by agreement with the latter.

5. The commercial network excludes one route operated by Drennan Aviation between Adelaide and station properties in the far north-east of the State and in south-west Queensland. The route is subsidised by the State Governments, Federal Government and Australia Post, and is not considered in the rest of the paper.

Rossair is taken into account, the number of ports served by competing operators is ten: Kingscote with five; Broken Hill, Port Pirie and Port Lincoln with three each; and Cleve, Leigh Creek, Port Pirie, Port Augusta and Whyalla, Renmark, and Mildura with two each. (Mount Gambier also receives competing services from Victorian-based operators.)

**TABLE 1: South Australia Based Operators**

| Operator | Aircraft Type Utilised* |
|---|---|
| Airlines of South Australia | Fokker F27 (4) |
| Albatross Air Charter | Piper PA 23 (2)<br>Beech 65 (1) |
| Commodore Aviation | Bandeirante (1)<br>Cessna 402 (4) |
| Drennan Aviation | Partenavia P68B (1) |
| Emu Airways | Cessna 402 (2) |
| Eyre Charter | Piper PA34 (1)<br>Cessna 402 (1) |
| O'Connor's Air Service | Cessna 402 (3)<br>Partenavia (1) |
| Opal Air | Cessna 421 (3) |
| Rossair | Cessna 402 (4) |
| Skytours | Aero Commander 680<br>Beech 65(1) |
| Trans Regional Airlines | Piper PA31 (2)<br>Bandeirante (1) |

* Indicative only, subject to frequent change.

**TABLE 2: Flights per Week from Adelaide, mid-1983**

| | Direct | Indirect | Total |
|---|---|---|---|
| Kingscote | 61 | 7 | 68 |
| Pt. Lincoln | 50 | 2 | 52 |
| Whyalla | 15 | 19 | 34 |
| Peneshaw | 21 | – | 21 |
| Pt. Pirie | 17 | – | 17 |
| Mt. Gambier | 11 | 5 | 16 |
| Broken Hill (NSW) | 11 | 5 | 16 |
| Mildura (Victoria) | 1 | 14 | 15 |
| Renmark | 14 | – | 14 |
| American River | 14 | – | 14 |
| Parndana | – | 14 | 14 |
| Leigh Creek | 8 | 5 | 13 |
| Pt. Augusta | 2 | 10 | 12 |
| Cleve | 6 | 5 | 11 |
| Ceduna | – | 10 | 10 |
| Tumby Bay | 10 | – | 10 |
| Cummins | – | 10 | 10 |
| Coober Pedy | 9 | – | 9 |
| Streaky Bay | 3 | 5 | 8 |
| Olympic Dam | 1 | 5 | 6 |
| Lock | – | 5 | 5 |
| Wudinna | – | 5 | 5 |
| Hawker | – | 5 | 5 |
| Minlaton | 5 | – | 5 |
| Cowell | – | 5 | 5 |
| Kimba | – | 5 | 5 |
| Kingston | 5 | – | 5 |
| Naracoorte | – | 5 | 5 |
| Millicent | – | 5 | 5 |
| Woomera | 5 | – | 5 |
| Marla | – | 2 | 2 |
| Ayers Rock (NT) | – | 2 | 2 |

**Source:** analysis of timetables.

In a number of cases, ports served by a single operator are within close driving distance of other ports and, in this respect, each may be considered to be serving a similar submarket. Kangaroo Island, for example, has four different ports on the RPT network and the southern tip of the Eyre Peninsula has three (Port Lincoln, Cummins, and Tumby Bay). Consideration of submarkets does not, in the case of Kangaroo Island, alter the competitive balance (the total number of competitors is five, the same number that serve Kingscote) but in the the Eyre Peninsula case it

does have the effect of increasing the number of competing operators from three to four.[6]

The fact that a port is served by more than one operator gives only a limited insight into the extent of competition until schedules and fares are taken into account. Daily schedules out of Adelaide (valid during the second quarter of 1983) have been analysed for the ten ports served by competing operators. Directly competing schedules occur for early weekday morning departures to about half the ports. Although there are competing schedules at other times, such occurrences are restricted largely to Kingscote; midday, evening and weekend schedules by an operator generally remain unopposed. In addition, competition on some early morning schedules is tempered by the indirectness of alternative flights. For example, this factor reduces the attractiveness of flights by Commodore to Broken Hill; the fact that Trans Regional Airlines and ASA operate to Broken Hill on different days means that actual competition on this route is limited.

In contrast to competition with respect to routes and schedules, price competition is rather more constrained. The constraint in this case derives from the *Independent Air Fares Committee Act*, 1981. The Independent Air Fares Committee (IAFC) is responsible for determining air fares on RPT services, including intrastate services, by incorporated bodies (this reflects the fact that the Act is based on the Commonwealth constitutional powers covering corporate affairs). Since it was established late in 1981, the Committee has been preoccupied with fare determinations on the major trunk airline routes and its involvement in local markets has been more limited. Nevertheless, its chief concern with the small 'airlines' remains the same as that for the major operators — to see that fares charged have regard to costs of operation. Its enabling legislation requires the IAFC 'to ensure that the level of air fares is related as closely as practicable to the cost of providing the services for which those air fares are charged' (The IAFC Act, 1981, part III). In practice, they have examined fare applications and compared the proposed fare with the distances involved, drawing attention to major departures from industry-wide standards. Naturally, a certain degree of 'reining-in' is to be

6. The close proximity of ports in these two submarkets nullifies the effect of both Cummins and Penneshaw being privately owned ports with the power to restrict entry to the market. In the case of Penneshaw this barrier was effected when the owner recently refused access to Trans Regional in favour of Commodore. Cummins is another interesting case, the strip being owned by the local operator, Eyre Charter. Consequently, in this vertically integrated structure, part of the chief sunk costs in aviation — the cost of airport plant — is incurred by the 'airline'.

expected, but the Committee does allow a degree of latitude when matching its own judgment against that of the operator. Consequently, it is possible to examine whether the contestability propositions are a reality in the South Australian market; specifically, whether there is a difference in fare structures (albeit small in view of the IAFC's influence) between single operator and multi-operator routes. If such a difference does prevail, it would suggest the existence of barriers to entry.

We examined this case by regressing the basic one-way economy fare against both great circle distances and a dummy variable. The dummy variable took the value 1 if the fare was on a route flown by more than one operator; otherwise it was zero. All fares, including those for travel between intermediate ports en route, were examined in this way. Just under half of the 62 fares included in the regression were for sectors flown by more than one operator; the mean distance was 305 kilometres (with a standard deviation of 211) and the mean fare $61.65 (with a standard deviation of $42). The dummy variable was insignificant indicating no difference in the basic fare structure between single operator and multi-operator routes. The 'flag-fall' component was $4.14 and the distance rate 18.8¢ per kilometre, with distance 'explaining' 90 per cent of the fare variation.

We also need to take into account promotional fares. These exist only on half a dozen routes. The crucial factor here is the extent to which promotions are a genuine attempt to adjust fares in line with the lower marginal costs of some products. Apart from two stand-by fares, the largest discounts are offered by ASA in relation to its F27 services. The F27 has a larger seating capacity than aircraft operated by other South Australian firms, and normally its available seat mile cost would be much lower than for the small twin-engined competing aircraft. (Actual seat mile costs depend, of course, on load factors.) The ASA promotions, currently a seven-day advanced purchase fare and a concession fare for residents of Kingscote, Port Lincoln, and Whyalla, could be interpreted in this light. The fact that promotions are not available on supplementary Rossair flights shown in the ASA timetable (these are flown by Cessna 402s), and that the residents' concession (introduced in May 1983) is intended for winter (off-peak) months only, tends to support this view. However, the residents' concession fare is not available from Broken Hill, where actual competition on the route is limited, nor from Mt. Gambier or Ceduna. The last two centres are served only by ASA/Rossair and by noncompeting flights by O'Connor's, although other operators have competed in these markets in the past. Both are relatively 'thin' routes with comparatively poor load factors. Consequently, in the case of these products, ASA might be operating on a sharply falling segment of the average cost curve so that prices in excess of marginal costs are more easily sustainable.

## IV. CHANGES SINCE 1979

We have concentrated thus far on the current situation in the South Australian industry. Now we consider the degree of change that has taken place since the adoption in 1979 of a more liberal attitude to entry at Federal level. Table 3 compares the number of weekly flights and ports served on scheduled services by South Australian based operators in September 1979 and May 1983. There has been a net increase of three in

**TABLE 3: South Australia Scheduled Services, 1979 and 1983**

| Operator | September 1979 | | May 1983 | |
|---|---|---|---|---|
| | Ports Served | Weekly Flights | Ports Served | Weekly Flights |
| ASA | 7 | 141* | 7 | 130 |
| Commodore Aviation | 2 | 24 | 10 | 168 |
| Emu Airways | 3 | 56 | 3 | 28 |
| Opal Air (SA) | 5 | 41 | 5 | 26 |
| Pagas/Trans Regional | 8 | 98 | 7 | 52 |
| Rossair | 2 | 6 | 6 | 22 |
| Williams Aviation | 7 | 68 | – | – |
| Drennan | – | – | ** | ** |
| Albatross | – | – | 2 | 24 |
| Eyre Charter | – | – | 3 | 20 |
| O'Connor's | – | – | 18 | 40 |
| Skytours | – | – | 2 | 12 |
| TOTAL FLIGHTS | | 434 | | 522 |

**Source:** BTE, *Basic Characteristics of General Aviation in Australia*, Occasional Paper 33, Canberra: AGPS, 1980; and analysis of timetables.

* Average over the whole year.
** Not Relevant.

the number of operators providing RPT services: four firms are offering services for the first time since September 1979 and one, Williams Aviation, has passed into receivership.[7]

Three of the new entrants (Albatross, Eyre Charter and Skytours) are single route operators. The exception is O'Connor's which, in terms of ports served, is now the largest operator. However the 'milk-run' nature of O'Connor's services means that, in terms of weekly flights, it is much less extensive than the longer-established Commodore. During the last two years in particular Commodore has added significantly to its network and in the past few months has developed two routes totally outside South Australia (Mildura-Melbourne and Mildura-Broken Hill). Commodore's expansion has been the result of picking up some of the pieces after the demise of Williams Aviation and taking over some of the assets and routes of the old Pagas company. Pagas's remaining assets and routes are operated now by Trans Regional Airlines.

Other operators extant in September 1979 have on the whole maintained a fairly stable level of operation. ASA, for example, operates the same route structure although at a slightly lower frequency.[8] Rossair has expanded the most, and in terms of its network of services is now similar in size to Emu and Opal. On the other hand, both Emu and Opal have contracted considerably their numbers of weekly flights although the number of ports served by each has remained constant. Taking this contraction of flights into account, the fact that the single route new entrants have thus far shown little inclination to expand suggests that, in spite of Commodore's behaviour to the contrary, economies of scope are limited. The co-existence of large and small 'commuter' operators — evident also on a national scale — appears to support this view.

Between September 1979 and May 1983 the total number of weekly flights into and out of Adelaide by 'commuter' operators expanded by one-third, while the total number of scheduled flights increased by 20 per cent. The expansion of available seats was less; we ignore this aspect. The consumer's preference function will include fares, the number and timing of flights, and in-flight quality; these are the aspects we take into account. The data available for September 1979 (Bureau of Transport

7. Williams passed into receivership in February 1981. Informed opinion suggests that the demise of the company was a consequence of ownership passing interstate, the introduction of inexperienced management, and a big expansion of operations incorporating up-market turbo engined Metro II's and Citation jets.

8. This consistency of ASA's operations is important because it allows us to interpret changes in 'commuter' services as net changes. It avoids, for example, the need to take into account quality trade-offs between non-pressured aircraft and pressurised F27s.

Economics, 1980:Figure 4.4) classify ports by ranges of flights per week so that a precise comparison with the 1983 situation, port by port, is not possible. But much of the increase in weekly flights appears to derive from the development of new routes rather than from competition in a particular market. Notable in this context are the new O'Connor's services, Eyre Charter's Services to and from Cummins and Tumby Bay, and Opal's Services to and from Marla and Olympic Dam. None of the 13 centres thus served were on the network in September 1979. Extra services have also been introduced on single firm routes to places such as Coober Pedy, Woomera, and Penneshaw. Within the State, there are only three ports evidently worse off in May 1983 compared with four years previously: Andamooka and Oodnadatta, which now have no flights, and Mt. Gambier. In the last few years, road services between Mt. Gambier and Adelaide have improved considerably and new air services eastwards into Victoria have developed also. These factors possibly explain why this port now has fewer weekly flights to and from Adelaide and why ASA now has an effective monopoly, albeit contestable, on this route.

A crude comparison of changes in the number of flights per commuter operator and per port gives an insight into the adaptive behaviour of firms and the extent to which services have improved or deteriorated for each port. Changing schedules and fare structures need to be taken into account also. This is particularly the case in those ports where competition in the market is more prevalent than it was in 1979. We need to consider, for example, whether competition has led to a bunching of departure and arrival times and a matching of fares. Consequently we have examined developments in the comparatively large Port Lincoln-Adelaide submarket in some detail. In May 1983 there were four operators (ASA, Commodore, O'Connor's and Rossair) flying RPT services between Adelaide and Port Lincoln. In addition, Eyre Charter offered services from Cummings, about 50 km north of Port Lincoln (with Tumby Bay as an optional port of call) while Trans Regional Airlines was about to commence twice weekly flights to Port Lincoln (via Kingscote). However, O'Connor's picks up passengers only at the request of ASA, and Rossair is chartered by ASA to supplement its F27 services. Consequently there were three operators competing in the market in May, a rather different situation from mid-1979 when ASA was the sole operator.

We have analysed timetables for the route at eight points in time to obtain some indication of the changes in service levels that have occurred in the more competitive environment (Table 4). In September 1978, for example, prior to Commodore entry to the market, ASA provided 40 flights per week between Adelaide and Port Lincoln, 20 in each direction. Day return trips from Port Lincoln to Adelaide were possible on three

weekdays (Monday, Tuesday and Friday). Since September 1978 the number of flights per week has increased from 40 to 108 in March 1983, with a peak of 138 in February 1982, just after Eyre Charter entered the market. Since that time both Commodore and Rossair have reduced the number of flights they operate. ASA has maintained its weekly flight frequency at 38 since 1980; this compares with 40 prior to the more competitive environment. The relative constancy of ASA's schedule eliminates the need to interpret trade-offs between high quality F27 flights operating at a lower frequency and lower quality commuter services operating with increased frequency.

**TABLE 4: Flights per Week Between Port Lincoln/Cummins and Adelaide by Operator, September 1978 - March 1983**

| Date | ASA* | Commodore | Eyre | Total |
|---|---|---|---|---|
| 9/78 | 40 | – | – | 40 |
| 11/79 | 40 | 42 | – | 82 |
| 12/80 | 38 | 57 | – | 95 |
| 5/81 | 38 (4) | 68 | – | 110 |
| 2/82 | 38 (14) | 68 | 18 | 138 |
| 9/82 | 38 (8) | 56 | 18 | 120 |
| 10/82 | 38 (8) | 46 | 18 | 110 |
| 3/83 | 38 (6) | 46 | 18 | 108 |

**Source:** analysis of timetables

* Figures in brackets show additional flights by Rossair's Cessnas.

To examine the possibility of parallel scheduling we have taken a Tuesday and analysed departure times for services to Adelaide, again at various times over a four-year period (Table 5).[9] Commodore commenced operation by scheduling flights around ASA's. For example, Commodore scheduled 7.30 am and 9.00 am flights as opposed to one 8.25 am flight by ASA. The early departure from Port Lincoln was obviously popular as Rossair then provided a flight at 7.20 am, although

9. Monday, Tuesday and Thursday all have similar timetables; Sunday and Friday have extra flights for weekend trips; Wednesday appears to be the least active day.

this was later dropped. ASA dropped its lunch-time departure and this time slot was taken up by Commodore (December 1980). By May 1981 Commodore had introduced a light aircraft in the 4.00 to 5.00-pm slot after ASA had moved there approximately six months earlier. In September 1982 Commodore brought forward that flight by an hour but then dropped it from the timetable. Eyre Charter offers only one flight on Tuesday, between 8.00-9.00 am in the same slot as ASA but from near-by Cummins rather than Port Lincoln.

**TABLE 5: Port Lincoln/Cummins — Tuesday Flights to Adelaide**

| TIME | DATE | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 9/78 | 11/79 | 12/80 | 5/81 | 2/82 | 9/82 | 10/82 | 3/83 |
| 0700-0759 | | C | C | C | RC | C | C | C |
| 0800-0859 | A | A | A | A | AE | AE | AE | AE |
| 0900-0959 | | C | C | C | C | | | |
| 1000-1059 | | | | | | | | |
| 1100-1159 | | | | | | | | |
| 1200-1259 | A | A | C | C | C | C | C | C |
| 1300-1359 | | | | | | | | |
| 1400-1459 | | | | | | | | |
| 1500-1559 | | | | | | C | | |
| 1600-1659 | | | A | AC | AC | A | A | A |
| 1700-1759 | | C | C | C | C | C | C | C |
| 1800-1859 | A | | | | | | | |
| 1900-1959 | | A | A | A | A | A | A | A |
| TOTAL | 3 | 6 | 7 | 8 | 10 | 8 | 7 | 7 |

**Source:** analysis of timetables

**Notes:** C — Commodore
A — ASA
R — Rossair
E — Eyre Charter

There appears, therefore, to be little evidence of parallel scheduling. In September 1978 services were offered between 8.25 am and 6.55 pm with an average interval between flights of over five hours; by March 1983 services were offered between 7.30 am and 7.10 pm with an average interval between flights of one hour forty minutes. There were, however, intervals in the middle of the day of three and a half and four hours. Based on the changes in the timetables this seems to be simply because of little demand at these times.

In summary, the last few years have seen a marked increase in frequency on the route. There has been a better coverage of departure times throughout the day, and the number of return trips to Adelaide possible within the day has increased considerably. Based on a minimum period of stay in Adelaide of five hours, residents of Port Lincoln and the surrounding district now have 20 flights to choose from in contrast to three only at the time of ASA's monopoly (see Table 6).

**TABLE 6: Day Return Trips Per Week: Port Lincoln/Cummins to Adelaide (Weekdays Only)**

| DATE | OPERATOR | | | |
|---|---|---|---|---|
| | ASA | Commodore | Eyre | Total |
| 9/78 | 3 | – | – | 3 |
| 11/79 | 3 | 5* | – | 8 |
| 12/80 | 3 | 10 | – | 13 |
| 5/81 | 3 | 10 | – | 13 |
| 2/82 | 7(4)** | 10 | 5 | 22 |
| 9/82 | 5 | 10 | 5 | 20 |
| 10/82 | 5 | 5* | 5 | 15 |
| 3/83 | 5 | 5 | 5 | 15 |

* Two departure times possible 7 am and 9 am
** Four by Rossair.

The changes in fares between Port Lincoln/Cummins and Adelaide are summarised in Figure 1. Commodore was the first to introduce promotional fares on the Port Lincoln route. In November 1979 a same day return of $60 (a 10 per cent discount) was available and in December that fare was extended to all return flights. ASA responded in March 1980 by

designating ten flights per week as off-peak and offering a return fare at a 15 per cent discount. In September 1980 Commodore offered an 'Excom' fare at 22 per cent discount on return flights. The Excom was an advance purchase fare with a seven day pre-paid time limit. In 1982 Commodore dropped its Excom fare and introduced a discount of 11 per cent (increased to 17 per cent in February 1983) restricted to Port Lincoln residents. The return discount, which applied to all passengers, was discontinued in February 1983.

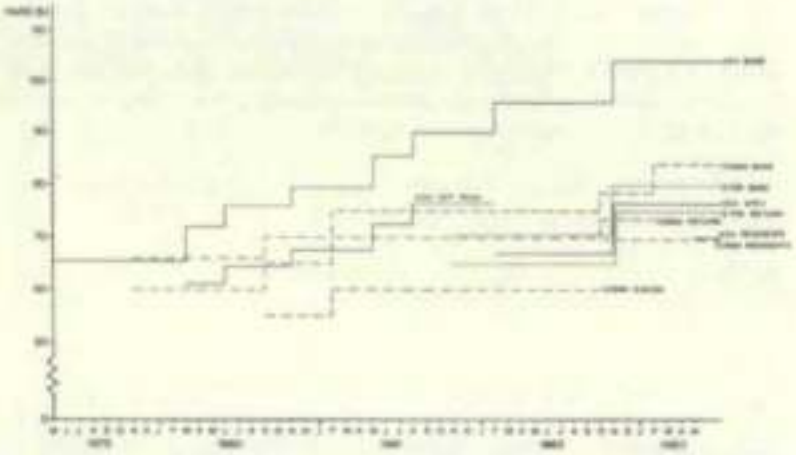

**FIGURE 1: Changes in Fares between Port Lincoln/Cummins and Adelaide.**

ASA did not respond to Commodore's Excom until March 1982, when it introduced an APEX fare with 30-day booking and 14-day payment periods and a 30 per cent discount. In the interim ASA continued offering off-peak return fares and increased the number of designated off-peak flights to 14 per week. In May 1983 ASA matched Commodore's single and return fares for Port Lincoln residents, offering a discount on its base fare of over 30 per cent with no advance booking or payment requirement. The base fares on ASA and Rossair flights are the same; no promotional fares are available on Rossair flights. The ASA base fare has continued to be higher than those of all other operators, and has increased in real terms over the period. But the discounts offered by ASA are substantial; persons who can avail themselves of ASA's promotional fares would pay the same or only slightly more than if they flew with the smaller operators.

ASA's reactions to the fares offered by the commuter operators must be seen against a background of falling passenger loadings and significant decline in ASA's share of the market since 1979. The number of passengers embarking on ASA's Port Lincoln services fell by 17 per cent, although during 1982 the position had stabilised and numbers increased slightly. During 1980 commuters held 15 per cent of the market, a share that increased to 31 per cent in 1982. ASA's experience on the Port Lincoln route is typical of its general experience in South Australia. Until 1979, it had operated for the most part as an uncontested monopolist and therefore had most to lose from the advent of a contestable market.

The adjustment on the part of ASA has been interesting. ASA operates an all-F27 fleet in fixed 44-seat configuration. Consequently it does not have the in-house flexibility to adjust the type of aircraft used on a particular service to anticipated loadings. Its reaction to this problem has been threefold. First, it has chartered small Cessna aircraft from Rossair to supplement its own schedules. Second, it has shaved schedules operated by F27s. And third, it has transferred capacity to charter work, including a large contract ferrying workers in and out of the Moomba gas fields in the far north of the State. This entry and exit behaviour within and between markets has had the effect of maintaining load factors (see Table 7) and maintaining if not slightly improving total revenue hours per aircraft, even though a fourth F27 aircraft was added to the fleet.

**TABLE 7: Performance Indicators: ASA**

| | Revenue Passenger Load Factor | Weight Load Factor | Annual Revenue Hours Per Aircraft (Total) | (RPT Services) | Total Hours on Scheduled Services |
|---|---|---|---|---|---|
| 1982* | 64.7 | 58.2 | 2,332 | 1,620 | 5,703 |
| 1981 | 63.8 | 57.5 | 2,306 | 1,938 | 5,989 |
| 1980 | 63.8 | 58.3 | 2,129 | 2,004 | 6,333 |
| 1979 | 66.2 | 59.8 | 2,178 | 2,067 | 6,200 |
| 1978 | 68.2 | 60.0 | 2,315 | ** | ** |
| 1977 | 67.8 | 62.8 | 2,114 | ** | ** |

**Source:** Department of Transport Annual Reports and Department of Aviation

* 1982 figures provisional.
**Not available.

## V. CONCLUSIONS

Since 1979 the number of services offered in the South Australian air passenger market has increased significantly. New single-firm routes have been developed (and sustained against entry), providing a number of centres with services for the first time and increasing the frequency of service to other centres. On multi-firm routes emphasis has been placed on differentiation of the product by scheduling departure and arrival times to fill empty slots and by offering promotional fares in the most competitive markets. We do not know, of course, the extent to which these developments would have happened if more restrictive controls on entry to the market had been maintained, but we believe that the new freedom of entry has acted as a catalyst.

The current market appears to be efficient because it is contestable. Base fares on 'thin' routes with monopoly suppliers are in line with those on multi-firm routes. Multi-firm routes are mostly operated by two or three firms, with the major exceptions of the Adelaide-Kingscote and Adelaide-Port Lincoln/Cummins routes. These are subject to a more pronounced seasonal pattern of demand. Bailey and Panzar (1981) have argued that competition in the market will be more evident in tourist centres because the greater flexibility of the discretionary traveller, who is less concerned about schedules and the availability of a seat at the last minute, creates an opportunity to cover joint costs by price discrimination. Load factors can then be made high enough to support the entry of several firms. The Adelaide-Kingscote and Adelaide-Port Lincoln markets appear to conform to this pattern.

Flexibility is important in a contestable market. To achieve this it is likely that airlines will increasingly turn to aircraft leasing instead of outright purchase, aircraft chartering, and the subcontracting of specific services. This development is apparent in South Australia with ASA's charter of Rossair's Cessna 402s and Commodore's recent lease of a Bandeirante. It is assisted by what we discern to be limited economies of scope, which allow for the long-run co-existence of many firms of different sizes and thus a pool of operators available for subcontract. In this respect a close parallel can be drawn with the existing road freight industry.

These latter developments might ease the problem of how and with what to replace ASA's ageing F27 aircraft. It has been suggested that the consumer will be worse off as a result of freedom of entry in South Australia, because the current rates of return on capital do not justify replacing the F27s with more modern and superior aircraft. (By implication the returns to a regulated monopolist would have allowed for this.) The new operating environment may well mean that a pressurised aircraft

smaller than the F27, operating at consistently higher load factors, is a better proposition. If so, we are not convinced that the consumer will be worse off; it is unlikely that aircraft size *per se* is in the consumer's preference function. But whatever size of aircraft is thought appropriate, leasing arrangements would appear to reduce the risks involved.[10]

10. Another option would be to retrofit the F27s with up-rated Mark 551 Dart engines, once they are available and certified for Australian operations.

# References

Bailey, E.E. (1981), 'Contestability and the design of regulatory and antitrust policy', *American Economic Review* 71(2).

Bailey, E.E. and J.C. Panzar (1981a), 'The contestability of airline markets during the transition to deregulation', *Law and Contemporary Problems* 44(1).

Baumol, W.J. (1982), 'Contestable markets: An uprising in the theory of industrial structure', *American Economic Review* 72(1).

Bureau of Transport Economics (1980), *Basic Characteristics of General Aviation in Australia*, Occasional Paper 33, Australian Government Publishing Service, Canberra.

Bureau of Transport Economics (1981), *Economic and Financial Issues Associated with General Aviation in Australia*, Occasional Paper 34, Australian Government Publishing Service, Canberra.

Findlay, C.C. (1983), 'Optimal air fares and flights frequency', *Journal of Transport Economics and Policy* 17(1).

Forsyth, P.J. and R.D. Hocking (1978), 'Optimal airline fares, service quality and congestion', *Forum Papers* of the Fourth Annual Meeting of the Australian Transport Research Forum.

Panzar, J.C. and R.D. Willig (1977), 'Free entry and the sustainability of natural monopoly', *Bell Journal of Economics* 8.

Pascoe, F. (1983), 'Many would suffer under domestic airline deregulation', *Australian Transport* (May).

# Airport Runway Capacity in the Sydney Region: The Problems of Allocation and Expansion

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# Airport Runway Capacity in the Sydney Region: The Problems of Allocation and Expansion

*P.J. Forsyth*

## I. THE PROBLEMS

There are three main economic problems associated with airport capacity in Sydney: (1) allocation of traffic between available airports; (2) the extent to which Kingsford Smith Airport (KSA) should be allowed to expand; and (3) the related though distinct problem of the noise generated by operations at KSA.

Locating a second airport is not a major economic problem. True, economic aspects do arise no matter where the airport is located, but these are secondary. The main problem is choosing among a range of very inconvenient sites with different environmental aspects. The choice among sites is politically difficult, involving a balance among very different environmental choices (for example, wombats vs traffic noise in suburbs vs trees). However, the economic aspects of different sites are relatively straightforward and measurable.

The timing of airport capacity expansion is more difficult and depends on the answers given to the three main questions. Ideally timing should be determined by following the pattern of policies that yields the highest net benefit. Most of the noneconomic aspects of a second airport are negative, so from this point of view postponement is probably desirable. But a possible noneconomic benefit is that a second airport may reduce the noise nuisance to Sydney residents. It is also desirable to make efficient use of existing capacity before new capacity is made available. There is no guarantee that this will happen; the experience of most other second airport developments suggests that it will not.

## II. SOME GENERAL ISSUES

Second airports are usually disasters. Before they are built there is often much argument, litigation and even warfare about the site. When they are completed, neither passengers nor airlines want to use them. They are

usually far from the centre of the city and from the other airport, and they offer only a restricted range of flights. It often takes 20 years or more for them to come of age and become popular. No matter how congested the original airport becomes airlines will not move to the new one. Diplomatic wrangles are not uncommon: British Airways was banned from flying to Turkey when Turkish Airlines was banished from Heathrow to London's second airport, Gatwick. Many second airports, such as Dulles and Narita, remain problems long after they open. In fact Gatwick is one of the more successful second airports, owing in part to the (relatively) efficient pricing/allocation policies adopted by the British Airports Authority (Amos and Bullock, 1979; Little and McLeod, 1972).

Second airports usually raise a variety of environmental issues. They may alleviate some problems — such as aircraft noise in the city — but they create new problems or merely shift the old ones to new areas. The face of the countryside is changed along with the ecology of neighbourhoods. Roads to the airport must go through urban areas, creating noise and pollution (though sometimes relieving access routes to the old airport). The Foulness/Maplin site was originally adopted as an environmentally 'good' site for a third London airport. Only after its adoption did the problems (previously pointed out by the Roskill Commission, which was overruled in the site choice) become clear.

The second Sydney airport (SSA) has been subjected to more economic and environmental analysis than perhaps any other project in Australia. There is a bewildering variety of reports on the subject (see Mills, 1982, for a survey and critique of the most recent group of studies). The result, unfortunately, is that the main alternatives do not emerge very clearly.

The purpose of this paper is not to review the reports nor to put forward views about which specific alternative is best. Most of the options have been analysed; our purpose here is to distil the trade-offs. Some general background on the economics of airports and the airport system of Sydney will set the stage for a discussion of the three main problems.

## III. AIRPORTS AND THE SYDNEY REGION

Second airports are always 'required' in ten years' time. In fact, many cities delay investment in new airports for considerable periods without serious problems. What usually happens is that airports' capacities expand gradually through technical progress, and changes in methods of operation make it possible for priority users to be catered for. Low value users are diverted. Airports are often subject to sharp peaks in demand, meaning that capacity may be pressed hard during part of the day yet be underused at other times. In these respects KSA Sydney is fairly typical.

Demand for its facilities is growing rapidly and there are no alternatives for much of the traffic. It is subject to peaks in demand during which delays may develop. The main users are international, interstate and intrastate airlines; these accounted for 58.7 per cent of the traffic in 1980 (Mills, 1982:178). The remaining 41.3 per cent of the traffic was general aviation, including commuter airlines.

The urgency of the need for extra capacity is usually justified in terms of the rapid growth rate of air transport. On the other hand, a rough idea of the scope for postponing a major new airport can be gained from noting that the forecast demand by airlines in year 2000 is less than the actual total demand including general aviation in 1980. However airlines' use of peak period capacity may be greater than this indicates, and it should not be assumed that general aviation will be entirely removed from KSA.

General aviation includes commuter airlines, business jets, small cargo and charter operators, and other small aircraft users. For many of them KSA is a convenient airport and is distinctly more desirable than the alternatives. Currently, most general aviation operators pay nothing to use the facilities. The value they put on using KSA would vary widely, with those carrying a high proportion of feeder traffic (i.e., commuter airlines) putting a higher value on it than others.

The attractiveness of KSA vis-a-vis its alternatives lies partly in its proximity to the centre of Sydney. An SSA would have to be constructed on the urban fringe, involving high financial and time costs to gain access. This will be the case whether or not specialised access routes are developed. For general aviation the airport at Bankstown is not as remote as an SSA site, but there are difficulties in gaining access to the City or KSA. It too is becoming crowded, but other general aviation airports exist on the urban fringe.

There are substantial economies of scale in airports, not so much in financial cost as in user convenience. On most flights, a proportion of passengers wish to travel farther on other flights. At a big airport connections will be easy; at a small airport they may not exist or may involve considerable waiting time. Other things being equal, passengers prefer to travel through busy rather than less busy airports. Cargo interchange is also easier at busy airports, and airlines like to have servicing facilities all at one airport. Thus, airlines strongly prefer to operate out of the major city airport.

These two factors, access and convenience for interlining, explain why new airports are unpopular. They will make the SSA a distinctly less attractive alternative to KSA for both passengers and airlines. Thus the division of traffic between the two airports will be critical. The short term question is whether general aviation should continue to be able to use KSA freely, and the longer term question will be what traffic will have to move to the SSA.

## IV. THE THREE MAIN QUESTIONS

### The allocation problem

The fundamental question, in both the short and the long term, is who is going to use what airport in the system. Efficient allocation of traffic between the airports is desirable but is definitely not automatic. Congestion may develop, traffic may be arbitrarily diverted to inappropriate airports, or expensive investments may be made in an attempt to avoid the allocation problem. But the problem cannot be avoided, and it must be solved somehow. The reason for providing additional capacity, such as an SSA, is that it is not possible to supply enough capacity at the most desired location. When additional capacity is provided, some traffic must necessarily be diverted there.

The usual criterion of efficiency is that the users who put the highest value on access to a facility should be able to use it. Other users who put less value on the facility are then forced to use alternatives or nothing. A system of charging based on the opportunity costs associated with the facility will achieve this. An airport has a fairly well defined capacity, demand for which will sometimes exceed the maximum available. Some rationing device must be used — economists usually prefer price. Arbitrarily denying access to certain users, such as general aviation users, is an inefficient way to ration capacity.

The allocation problem involves determining not only who should use the preferred airport, but also at what times they should use it. Demand at peaks may exceed capacity. The inefficient way to ration is through congestion: traffic builds up and must face a predictable but costly delay. The throughput of the airport is only slightly increased, but costs increase substantially. In addition, the opportunity cost of using the airport differs at different times of the day.

The price solution to the problem is to charge higher prices for peak times and for the preferred airport until demand no longer exceeds capacity. Few airports use a pure price system, partly because demand is subject to variation from day to day and week to week, yet capacity is fixed. A common practice is to declare a capacity of the airport for each time period. Rights to use (or slots) can be auctioned or arbitrarily given to the potential users. If these users can, and are willing, to trade among themselves, those willing to pay most for the slots will obtain them. Arbitrary allocation of slots conveys considerable benefits on airlines that obtain them since (like import quotas) they can be sold. An airport can obtain most of the revenue from a price system and yet maintain the precision of a slot system by charging a little less than market clearing prices, and ensuring that the slots it gives away are not very valuable. It

can keep a little capacity for sale at a given (high) price for any users who do not obtain slots through trade, but who are willing to pay a high price.

An allocation system of approximately this type would probably be most suited to KSA. Airlines would be able to trade slots through airport scheduling committees. The initial allocation of slots is not important except in that they are valuable. General aviation users would probably be keen to sell or trade their slots as demand grew because the slots would become more valuable. No users need be arbitrarily excluded from the airport. Systems like this operate at London and in the United States.

The likely effect of a pricing-slot scheme would be that the price of peak slots and the price of using the preferred airport would be higher than those of off-hours and other airports. General aviation would be discouraged from operating at the peak and, over time, from using KSA. Some general aviation users, such as those with connecting flights, would be prepared to pay the price, but they would be relatively few.

When a second airport is available, the price of using it would be less than that of using the preferred airport. This would induce some users to switch. The price premium for KSA might be large, because the SSA will be a distinctly inferior airport. While there may be some justification for concentrating either domestic or international flights at the SSA, it is quite possible that this will be an inefficient solution. An obvious reason is that people will wish to transfer between domestic and international flights, and separating them will impose large costs.

If airlines are allowed to choose which flights they operate out of the SSA, it is unlikely that they would end up operating only domestic or international flights out of it. This rarely happens when airlines have some choice. Rather, the second airport is likely to attract users who do not wish to transfer (or interline) and who wish to travel to the airport by car. The experience of London airports is instructive. The two 'second' airports, Gatwick and Luton, concentrated on charter traffic, i.e., low-cost leisure traffic, for years. This traffic did not mind inconvenience as the price of saving, and did not wish to interline. As Gatwick became larger and offered a range of flights, its role as an interlining airport increased. This may be the most effective role for an SSA. The existence of specialist charter airlines is not necessary to achieve this result; rather, it is important to identify certain flights as being mainly leisure-oriented.

Reliance on price-based allocation systems may not lower overall demand for capacity by much nor reduce the peak demand substantially. It will however ensure that the available capacity is efficiently used. An attempt to avoid the allocation problem by building an SSA early will not only be costly, but will fail. As soon as it is complete the allocation problem will need to be solved, and if this is done inefficiently major problems will remain and the new investment will be perceived as a white elephant.

**The Kingsford Smith expansion problem**

The question of whether to expand KSA can readily be put to the test of cost-benefit analysis. Construction costs of an extra runway and other facilities are relatively high because it is a constricted site. The alternatives are to advance the date of the SSA or to increase general aviation airport capacity, the former being the more costly. There is the possible cost of additional noise nuisance, though this may be zero if the use of the airport by noisy aircraft is restricted. The major benefit is that the extra capacity will be at the most preferred airport, where interlining is easiest.

Several levels of development are possible at KSA. The cheapest is to build a short take-off runway. A close-spaced parallel runway would add about 40 per cent to capacity; a wide-spaced runway would add close to 100 per cent and would cost a little more than the close-spaced runway.

**The noise level at Kingsford Smith**

The decision about permissible noise created by operations at KSA is distinct from the question of total capacity. Jets are the only significant creators of noise, and they are operated mainly by the major airlines. Thus the mix of traffic affects the noisiness of an airport.

The noise nuisance to a given area is often measured by the noisiness of each flight in that area and by the number of flights. (Indexes of noisiness and number of flights can be developed, though they are not precise.) If it were decided to keep noise nuisance at current levels, a gradual increase in jet operations could be permitted because over time the noise generated by jet aircraft can be expected to decline — already quieter types are coming into operation. An increase in runway capacity at KSA would involve mainly low noise aircraft. If KSA capacity is not increased the noise nuisance may increase because there will be more jet flights, although each flight will be quieter. An SSA need not reduce noise at KSA since the noiser aircraft may still tend to use it.

In the near future, the policy that is best by other criteria will be to use KSA more for jets — and this necessarily increases at least one component of the noise nuisance index. Reduction or limitation of noise created at KSA will not be consistent with policies that are otherwise efficient. The trade-offs must be specified and an explicit policy on permissible noise levels established, or a price for noise creation set; otherwise noise generation at KSA may be greater than the efficient level. Compensation of residents who lose by noise may well enable an efficient allocation of traffic between airports to become politically acceptable.

## V. CURRENT ALTERNATIVES

It is important that a policy be developed to meet the problem of increasing demand at KSA. The alternative of doing nothing is, in this case, an expensive one. If no more capacity is provided and allocation rules remain as they are, congestion will soon develop and probably quite quickly become intolerable. The real alternatives are between efficient and inefficient allocation rules, and between expansion at KSA or the SSA. A system of arbitrary traffic allocation elsewhere would be inefficient at least in some degree.

Unless some airports have excess capacity, the allocation system is necessarily linked to the question of where to expand capacity. The investment options for constructing more general aviation capacity are expanding KSA (with short take-off, close- or wide-spaced runways) and building the SSA. As demand expands more than one of these may have to be undertaken, and timing becomes the important question.

Building more capacity at KSA is an expensive way to avoid the allocation problem. If it is intended to allow general aviation to continue using the major airport it is very likely to be socially wasteful. There are benefits in general aviation being able to use KSA, but the cost of providing those benefits is likely to prove high relative to the costs of using existing airports such as Bankstown. The cheapest way of providing for general aviation at KSA may be adding a short runway. The benefits of this could conceivably outweigh the extra cost though it seems unlikely. The only way to test the idea is to raise prices at KSA and see whether this traffic is prepared to pay the extra cost.

If it is doubtful whether general aviation would be prepared to pay the costs of a short runway at KSA, it certainly would not pay for a full runway. Thus a full runway, close- or wide-spaced, would be a wasteful investment in the short term, but it could be an efficient solution in the long term. That is, it is not worthwhile now.

An early opening of the SSA could also enable general aviation to stay at KSA, if, for example, international traffic were to be reallocated to the SSA. This would be highly inefficient, however. It would mean that aircraft with 400 passengers were being diverted to beyond Liverpool in order to allow aircraft with ten or fewer passengers to avoid being diverted to Bankstown. It is difficult to escape the conclusion that the efficient solution is almost certain to involve the diversion of general aviation from KSA — probably to Bankstown — though there is a chance of a short runway at KSA being worthwhile. It is also clear that any major investments in capacity for airline traffic should come after the general aviation allocation problem has been solved.

Considering the two options for KSA expansion, it is also clear that the close-spaced parallel solution, as favoured by the previous federal government, is wasteful. It looks very much like a high-cost way of avoiding the allocation problem and attempting to please everyone — except the residents affected by noise. If it is worth developing KSA, it is worth investing in a wide-spaced runway and achieving a much greater capacity at little extra cost (unless demand grows slowly, and the real interest rate is very high). Compared to schemes involving diversion of general aviation, development at KSA will not create more noise nuisance in the short term as the number of jets using the airport will be no greater. In the long term, however, more jets will operate out of KSA, though they will be quieter. It is difficult to predict the net change in noise nuisance.

The long term alternative is between KSA with wide-spaced parallel runways and the SSA. This amounts to a problem of evaluating the extra cost of the KSA developments, plus the additional noise cost, and possible additional congestion costs imposed on the region, as against the extra travel and inconvenience costs of the SSA. Would users be prepared to pay the higher cost of KSA, including perhaps a levy to compensate those adversely affected by noise? The only real test is to adopt pricing/auctioning policies as discussed in the previous section and find out.

## VI. CONCLUSIONS

The complexities of the second Sydney airport question owe mainly to the wide range of inefficient allocation possibilities, and to political attempts to avoid allocation decisions by adopting high cost options that please everyone (except those who pay for them). There are subjective issues such as the cost of noise nuisance, the extent to which residents near KSA should be forced to tolerate it, and the value of KSA's convenience to airlines and passengers. Recent research has helped answer some of these questions, but from now on major advances in our knowledge will probably come only from the results of actual market experiments.

The most efficient approach to the airport problem in Sydney is straightforward. The first step is to establish efficient capacity allocation devices (which need not be solely prices). These will probably discourage general aviation use of KSA as traffic grows. If the prices that achieve diversion of traffic are low, there is no urgency for an SSA because capacity will be adequate. If the prices need to be high, there is again no urgency for the SSA as it will be judged a poor alternative to KSA. Additional capacity may be needed for diverted traffic; it will be relatively cheap to provide. Clearly these steps should be undertaken before

major investments in capacity for high value (mainly airline) traffic are undertaken. Observing the prices that users are prepared (and not prepared) to pay will help to quantify the value of KSA's convenience. The choice between an SSA and wide-spaced runways at KSA will become clearer, even though some questions (such as permissible noise levels) will still be disputable. Even granted the lags associated with major investments, the growth of traffic is not so rapid that decisions are needed immediately. If efficient traffic allocation methods are adopted, we still have a few years in which to consider the alternatives.

# References

Amos, P.F. and R.G. Bullock (1979), 'Traffic management policy at a major airport', *Australian Transport Research Forum*, Sydney.

Little, I.M.D. and K.M. McLeod (1972), 'The new pricing policy of the British Airports Authority', *Journal of Transport Economics and Policy* (May).

Mills, G. (1982), 'Investment in airport capacity — A critical review of the MANS (Major Airport Needs of Sydney) Study', *Australian Transport Research Forum*, Hobart.

# Discussion

**Q:** I have a question for Peter Forsyth about the pricing of buying a slot at the airport. It seemed to me that you were saying that there would be little difference between prices set in advance, and an auction system. I would have gone for the auctions straight away since bidding for the slots is going to reveal information about the congestion of the airport. Planners will get a signal about increasing capacity and can see the effect it will have on the cost recovery program. Why did you appear indifferent between the two plans?

**Forsyth:** I didn't mean to give the idea that I was indifferent. I would prefer the auction plan myself. I would think that as you say constructing a price system would be fairly difficult given that you don't know a lot of the required information.

**Q:** Two questions for Peter Forsyth. You said that if the price you get is low or if it is high, then perhaps that indicates that there is no need for additional airport capacity. Is there a middle ground where there is a need? And second, would you assume that Bankstown is ready to take up the excess demand, or perhaps that it may not be able to handle the additional operational problems?

**Forsyth:** I don't see that there is a middle ground. No matter which way you look at it there is no urgency for a second Sydney airport or for committing ourselves to major investments before working out who is going to go where or at least trying to find out who is willing to go where.

On the question of Bankstown, sure there may be operational problems at Bankstown. What would then be needed would be more general aviation capacity — not necessarily at Bankstown but at some of the other outskirt aerodromes like Fairfield, Camden, and so on. The point here is that a ranking of airports will develop. Perhaps Bankstown will be used more and more for passenger charter and commuter aircraft, and the aero clubs and so forth will tend to go further out — presuming of course that they are not prepared to pay the same price for the convenience as the commuter airlines would be. I recognise that there are problems with Bankstown, but building extra general aviation capacity out at Badgery's Creek, let's say, is going to be a hell of lot cheaper than building a major international airport.

**Q:** I am wondering how you start the process of a slot system as you describe it? Do you toss everyone out first and then start off fresh? For

example, international airlines schedule several months in advance and Australia is at the end of the line on a lot of long routes. There is a small window they must get into. If they don't know two or three months in advance that they can have that spot in Sydney, they will start getting the next spot in Hong Kong and the next one in London and Perth.

Say for example you ran a sample on computer and got the ten prime slots from the international point of view. Negotiations could go on indefinitly for the right price. It could be the last day before the schedule is due to start before the international airline gets its slot. How is that more efficient than the present congestion where you leave it to the users to sort it out for themselves?

**Forsyth:** Airline congestion is just pure wasted fuel, wasted time, and wasted everything else. I agree that it is sometimes fairly difficult to work out a slot system where everyone gets what they want in time. But most major US airports, London, and I think some other European airports use slot systems. What happens is that you get allocated slots a fairly long time in advance. If you are worried about stability you can always reserve a certain number of slots — say 90 per cent allocated in advance and another 10 per cent that you are prepared to allocate, at a price, on shorter notice.

**Q:** When a new operator comes on the scene how does he fit into the system that has already allocated the slots?

**Forsyth:** It depends on the slot system in operation. In some US airports they can trade off slots with other airlines. For example one airline might have a bit of spare capacity in Chicago and might make a deal with another airline to trade the two o'clock slot in Chicago for an extra slot in New York — something along those lines. How does a new airline get a slot? In a straight auction system it could bid; sometimes in the US they retain certain slots for just random allocation or just new airlines, and so forth. There are a range of possibilities, but my preference would be one where trading slots would be encouraged and where it would become profitable to buy a certain proportion of them at a price.

**Q:** Can you imagine the IAFC taking into account what the airline pays for that slot as part of its fare structure?

**Forsyth:** Well, presumably more of the air navigational charges would be loaded onto airport use as an airport use charge, and the busy airports would be charging higher fees. So users would have to scramble less and pay fewer navigational charges. This would help to avoid the situation where three or four 20-seater aircraft hold up several jumbos.

**Q:** Peter Forsyth, I think you said in your paper that where a second airport is located is not a great economic problem. Would you elaborate on that?

**Forsyth:** Perhaps I should say it a little more precisely. I don't mean that it is not a major problem. But from an analytical point of view we can fairly easily point out what is involved. We can say for example that Badgery's Creek would be a more convenient site than Goulburn. That is fairly straightforward. Then we can look between Badgery's Creek and Galston or anywhere else and calculate the different costs and benefits of airports in different locations. It is not always an easy job but it is not as though it is a really confused issue because we know what to look for. Of course many of the costs and benefits are not going to be straight economic ones with dollar signs on them. More houses will be affected here, a wilderness area will be affected there, and so a politician will have to work out that sort of balance. But it is a straightfoward tradeoff.

# Three R's of Domestic Aviation Policy in Australia: Regulation, Redistribution and Risk

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# Three R's of Domestic Aviation Policy in Australia: Regulation, Redistribution and Risk

*Colin A. Gannon*

## I. INTRODUCTION

Given the nature of this occasion, I thought it would be appropriate to make a few speculative and probably provocative remarks about domestic aviation policy in Australia. An underlying theme of my remarks is the extent to which aviation policy itself is shaped by speculation regarding the outcomes of alternative policies. Therefore I may be somewhat vulnerable to the charge of inconsistency, but I have not let this circumscribe my remarks.

I would like to indulge in a very brief review of Australia's domestic aviation policy under three headings: regulation, redistribution and risk. Although these three R's may be somewhat contrived, I hope to illustrate how they provide a useful, if not particularly novel basis for understanding the origins, current status and probable future of domestic aviation policy in Australia. At the same time I should confess to another rather artificial construction: I intend to relate these three R's to three broad issues — inefficiency, inequity and instability — and to three elements of policy — principles, presumptions and performance. This contrived scheme for reviewing the core of Australia's domestic aviation policy, i.e., the 'Two-Airline Policy', is set out in Figure 1. I will refer to the headings on the right of the figure a little later.

## II. REGULATION: THE TWO-AIRLINE POLICY

An appreciation for the historical importance of regulation, redistribution and risk can be readily gained by examining the origin and development of the Two-Airline Policy. In the late 1940s and early 1950s the airline industry underwent considerable organisational restructuring, as we would expect of a relatively new and expanding industry. Such restructuring was seen in many quarters as reflecting an inherent instability

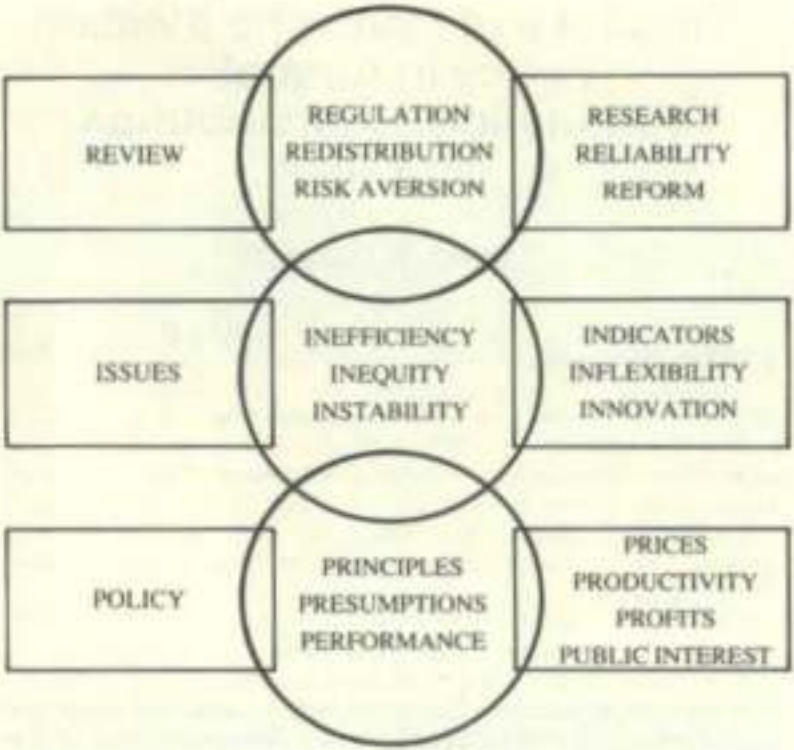


**FIGURE 1: One view of the Two-Airline Policy from three perspectives**

unacceptable in such an industry. When it appeared that this restructuring would lead to one major airline (which happened to be the government-owned airline), an 'ideological compromise' in the form of a two-airline policy (one publicly owned and one privately owned) was established —

with the attendant regulations. Thus, exposure to major perceived risks was removed, financial security of the airlines was provided for, and the instability of the industry was resolved. While there have been significant relaxations at the periphery (for example, air freight, specialised services and discount fares), the essential core of the Two-Airline Policy remains intact after more than three decades — a period over which the aviation industry has matured considerably.

The Two-Airline Policy has been described as prohibitive, protectionist, and paternalistic — features of industry policy that are hardly unknown in Australia. However, while other industries may be subject to considerable government intervention, domestic aviation stands out in terms of the directness and comprehensiveness of its economic regulation. Quantity and quality of inputs and outputs are controlled by the Department of Aviation, and prices are subject to approval by the Independent Air Fares Committee. Substantive business decisions able to be taken by the airlines are limited — although a little less since the 1981 legislation. For some decisions, such as scheduling, airline discretion is circumscribed.

At the same time, the agreement between the airlines and the Government provided considerable scope for dealing with alleged inequities associated with the provision of air services, especially concerning routes, levels of service and fares. Eventually, a fare formula was introduced so that fares differed essentially only by distance flown (and indeed, until recently, the difference in fares was proportional to the difference in distance flown). Thus, through economic regulation, fares could be moulded to reflect perceived equity, even though such fares were in many cases demonstrably inefficient.

## III. REDISTRIBUTION

Governments have used the regulation of industry, in this case the aviation industry, as an instrument for redistribution to serve particular social and political ends. There is nothing new in that. Numerous studies identify industry regulation as a device outside the explicit budget appropriation process that can effect particular forms of redistribution. While the provision of subsidies to specific groups is a proper function of government, it seems desirable in our political system that such subsidies be explicit and visible, and serve their intended purposes in the most cost-effective way.

A key question to be answered here is who are the gainers and who are the losers under the Two-Airline Policy compared to some alternative policy. Groups with a vested interest in the Two-Airline Policy and who

have asserted varying degrees of influence in shaping and preserving it include: (1) the airlines' owners, shareholders and employees (staff and management); (2) certain consumers of airline services (particular types of travellers and destinations); (3) suppliers of airline inputs; (4) other business interests involved with complementary activities, such as tourism operators, or close substitutes, such as international carriers and surface mode operators; and (5) regulators, bureaucrats, politicians, and possibly even academics, who are affected by and respond to the degree of regulation of the industry.

Identifying rent-seeking in the Australian civil aviation industry and estimating its forms and size would be a fruitful area for policy-oriented research. So too would further investigation of cross-subsidisation in the provision of air services. This issue is pertinent to an appreciation of the operation of the Two-Airline Policy itself and to likely origins of resistance to changes in it. On this issue of redistribution, let me note that provisions of the IAFC Act (1981) call for the development of a workable and appropriate definition of cross-subsidisation in the context of the trunk route network — where joint costs are substantial.

## IV. TWO KINDS OF RISK

Now let me turn to the question of risk in the context of domestic aviation policy. I actually have in mind two different matters in relation to this heading. The first concerns the actual exposure to risk of an accident associated with travel by air. There are some important research questions here associated with the proper characterisation of very low probability events such as airline accidents and incidents. Clearly, air travellers and the public at large perceive the risk of an air accident quite differently from the risk of a road accident. It is worth noting that the safety record of the airline industry in Australia over the last 25 years or so is superb, and among the top in the world. The high technical performance and reliability of the airlines and the strong regulations governing airworthiness, flight standards and air operations illustrate the importance placed on minimising exposure of passengers and others to risk.

The second matter I want to raise in connection with risk is the aversion to risk that tends to be a part of bureaucratic and political behaviour. Understandably, this is most evident with respect to attitudes toward and approaches to air safety. Air safety cannot really be divorced from economic considerations — it costs money to maintain. The selected cost effective strategy may be the one that achieves maximum tolerable levels of risk — despite a strong reluctance on the part of politicians and

regulators to concede publicly the necessity to deal with such difficult questions and the trade-offs they involve.

Bureaucratic risk aversion is a significant factor in the policy making process. In particular, I want to focus on its relevance to the Two-Airline Policy. Quite simply, I suggest that there tends to be an inherent conservatism on the part of politicians, bureaucrats, and regulators in their approach to both large and small changes to an ongoing policy, especially if that policy is working well from a technical standpoint. This is quite understandable when we think of the rapidly diminishing marginal gains ('utility') to the politician or regulator personally from successful policy changes. Moreover, there are constraints on how fast policies can be changed. For the bureaucrat, the best policy tends to be the one that works tolerably well and involves the least downside risk in terms of its potential effects, including career consequences for those who might be held responsible. Whether such an approach leads to a combination of resistance to change and inertia, or to a combination of responsibility to passengers and carefully measured reform, is open to debate.

## V. ANOTHER THREE R'S: REVIEW, RESEARCH AND REFORM

My focus on regulation, redistribution and risk is designed to illustrate another aspect of domestic aviation policy, namely the policy review process. I want to briefly raise the question of the pertinence of research in this context and also comment on some characteristics of political and bureaucratic behaviour.

Over the past six years or so (since the Domestic Air Transport Policy Review) considerable research has been undertaken in Australia on the domestic airline industry. The main focus of this research has been the assessment of the Two-Airline Policy, with particular reference to the economic performance of the two airlines (factor productivity, profitability, scheduling and costs) and the structure and level of fares. These are quite complex research areas and results have been subject to certain qualifications. Claims of incompleteness and inaccuracy have been advanced, some of them legitimate but others merely to rationalise a conservative policy posture — a point to which I will return later. However, a substantial body of research is now available that suggests, on the basis of several indicators, that the economic performance of the two major airlines in Australia does not compare favourably with that of other airlines, typically those in less regulated environments. Yet this research has had only a minor influence in the policy area.

Of course, it is not unusual for such research to have little impact. I suggest that this is especially true in the Australian context. Change and

improvements in airline performance and efficiency are most likely to be achieved by experimentation in the market place. This can occur when the incumbents introduce new services and new fares (which have been modest until recently) or when new entrants provide effective competition (which has been essentially non-existent until recently and is still very limited). The latter is more likely to put pressure on incumbents to improve their cost performance. Without these 'experiments', it is still possible for pressure to be exerted from outside, albeit bluntly. For example, if comparable air services are provided successfully elsewhere at much lower prices, the demonstration effect can cause passengers and potential passengers to exert political pressure for change (cf. Laker). However, unless the performance of incumbent airlines is grossly inferior, merely identifying airline inefficiency and its causes (for example, attributing it to a regulatory environment such as the Two-Airline Policy) is unlikely to initiate policy review and reform.

I am not saying that more analytical work on the economic efficiency of the airline industry is not valuable — on the contrary I firmly believe it is. Rather, I suggest that research also needs to be directed to areas other than economic efficiency, and this may mean some reallocation of research priorities — at least as I see them. Specifically, in the context of review and assessment of the Two-Airline Policy, I submit that the issues of redistribution and risk are at least as important as the issue of economic efficiency in aviation policy deliberations. More research into these areas may not lead to a change in policy, but it will clarify and improve general understanding of the policy objectives of the Two-Airline Policy and how they are being served.

A final matter in respect of my heading of policy review, research and reform concerns the size and path of change. Changes embodied in the new Two-Airline Policy legislation are marginal — for example, greater entry is allowed to provide 'specialised services'. A fundamental policy question is whether small changes to a policy provide an adequate basis for commercially viable experimentation, and also feedback on the likely net benefits of further change. The 'toe-in-the-water' approach is consistent with risk aversion — small changes can usually be modified or withdrawn if the effects are judged unsatisfactory. Moreover, many believe that the effects of small changes are more predictable than the full consequences of large 'structural' changes.

It may be worth assessing carefully the conclusion reached by Alfred Kahn, Chairman of the US Civil Aeronautics Board during the introductory phase of the recent deregulation of the US domestic airline industry. Kahn came to the view that the change from a more regulated to a less regulated or deregulated regime should be implemented quickly and not in a piecemeal fashion. Gradual relaxation of the rules or mere 'tinkering' with the institutional framework can prevent adequate scope for airlines

to explore markets, develop new services, route structures and fares, and undertake organisational rationalisation, mergers and so on.

Whether Kahn's conclusion and the logic behind it are applicable in Australia is not immediately apparent. There are substantial differences between Australia's Two-Airline Policy and the US regulatory regime prior to deregulation. Moreover, the Australian trunk route network consists of a wide mix of route densities and stage lengths (including several long thin routes) and, overall, a relatively small market. The outcome of partial relaxation of entry, and in particular its commercial viability, will depend on the specific routes and pricing conditions that are nominated. There is considerable scope for policy-relevant research in this area. Such research could examine not only the likely outcome of changes in regulatory arrangements but also the likely path of adjustment including effects on services offered, passenger groups and others affected, and the retaliation prospects of the existing airlines. Such research may help to reduce the risk of change as perceived by regulators and politicians — and hence assist in the adoption of policy reforms.

However, it should be recognised that business activity by its very nature involves uncertainty and commercial risk. This risk may be reduced and/or spread by economic regulations, particularly the control of entry and exit. A degree of financial stability may be achieved and this may be satisfactory to the airlines and even reassuring to government. But the opportunity costs may be high. By suppressing or removing the incentive for entrepreneurial effort, the search for profitable innovations — new markets, products and procedures — is discouraged and economic performance can suffer.

Regulation of economic activity, including airlines, is typically adopted to meet a number of objectives. Often these objectives are not well defined and invariably they are in conflict. A proper starting point for debate in this area is explicit and rational consideration of the extent to which the various objectives are met under existing policy and the changes that would happen (i.e., the various 'opportunity costs') under alternative policies. Given the inherent uncertainties involved in such a process, it is difficult to avoid appeal at some point to personal judgment. An important task for research is to improve predictability and the information base so that there is reduced need for judgments about individual policy outcomes and an improved basis for making choices among policy alternatives themselves.

## VI. CONCLUSION

Bearing in mind the current state of knowledge and judgment, let me conclude by expounding three different views of domestic aviation policy

in Australia. These views capture many of the points I have touched upon.

From one point of view there is resistance, inertia and procrastination. A second view sees responsibility, inquiry and perspicacity. The third view is one of reform, innovation and progress. I leave it to you to judge which perspective may best characterise domestic aviation policy development in Australia.

# Discussion

**Kevin Cairns (member of IAFC):** I would like to make one or two points in relation to Colin Gannon's remarks. First, if you are looking at an overall policy change that affects people all around the country, they will want to know what their ultimate position is going to be. It is not sufficient to say that the market system will look after everything, the allocation of resources will see that you are OK, therefore we can go on. That is just not on. Changes can only go at the pace at which people will understand what is going to happen. That always deserves to be borne in mind when looking at the Two-Airline Policy and regulation.

One other comment. There are industries that are more regulated than airlines. Michael Kirby was here this morning and Michael is an agricultural economist. He should tell us something about the sugar industry, because the sugar industry would think the airline industry was an open, free-market set of anarchists. So I think those things ought be borne in mind.

Now I want to say a few things about the application of the *Air Fares Committee Act* itself and the way we have administered it. You may not be aware of the details. There are several types of reviews that apply to pricing policy for airlines. There is what is known as a major airfares review, which takes into account many costs plus a few other things and applies to changes in air fares in excess of 5 per cent. There is a minor airfares review, which takes into account smaller changes in cost on a small number of items such as fuel, wages, and so on. Minor reviews are done from time to time. There is a cost allocation review, which is the occasion on which you can have public representation concerning the cost within the system as well as being the occasion on which significant demand factors can be taken into account. In a cost allocation review the review process itself applies to an existing air system. And finally discount fares are reviewed as well. I think that that makes up the total.

The difficulties of deciding upon a pricing policy that is understood and accepted by the Australian public I'll illustrate in a couple of ways. You go around the country and everybody has a view about airfares and no one ever wants them to go up. In Western Australia, they have one simple theme always: they have been the subject of an injustice over many years and that injustice is continuing. In Sydney, the simple line is that it's the commerical capital of Australia and so it ought to have a system of airfares that makes it available to most people in the country at reasonable costs and preferably by air. Canberra, of course, has said that it is the cultural capital of Australia and everybody ought to be able to travel there by air. I think the Tasmanians are the most ingenuous. They

say that pricing policies on airfares to and within Tasmania should be regarded as marginal or incremental to the rest of the Australia. The fact that I have left out Brisbane and Melbourne merely means that they were too slothful to think of something new. But everybody has a view with respect to airfares and all of them must be taken into account. So you get misunderstandings.

I want to deal with a few of the misunderstandings that have occurred and been referred to in the press recently. I saw an article the other day written by John Stackhouse. He said the Independent Air Fares Committee acts as a barrier between people and the pricing policies. He also misunderstands discount fares. There are cost-based discount fares and demand-based discount fares. The second type occurs much more frequently within the total system than the first. It would be fair to say that discounting and competition have been pushed into the system more over the last 18 months than ever before. In fact we have dealt with about 160 discount fares and discount fare applications since we have been in existence.

We do have some problems with discount fares. Under the discount procedures of the Act itself, there are three criteria to be borne in mind: the effects of discounts on other fares; that they are to be applied without discrimination (I'm not going to go through this section of the Act in detail); and that they are to add to profitability. But one thing the discount fares procedures as we interpret it doesn't enable us to do is make very complete judgments about cross-subsidisation within the system. In fact there can be significant discount fares on one part of the system, a third of those operating on one part of the same airline system, and yet cross-subsidisation, which some might say could occur under such circumstances, is not allowed to be contemplated within the discount fares procedure.

There are three important points to consider when making decisions on discount fares: discount fares should be aimed at generating new travellers, at topping up aircraft usage, and at ensuring that the basic fares paid by the majority of Australians don't have to be increased. That sentence acknowledges the limitations of the discount fare procedure in determining cross-subsidisation. Where discount fare traffic becomes predominant on a route, there is a danger that discount passengers may be cross-subsidised by that airline's normal fare-paying passengers. So we do have to concern ourselves with these issues and we do have to make judgments in relation to them.

One final comment. We do have to make choices, sometimes very difficult ones. It is not a matter of making recommendations or giving a bit of advice and sitting somewhere letting someone else make the decisions. We have to make the choices and sometimes those choices are difficult. But I can assure you that they are always just.

# General Discussion

**Findlay:** Mr Cairns' comments about perceived fairness prompt me to try to articulate another view of how we should allocate resources. He said it wasn't on that we didn't know in advance what the outcome was going to be. It seems to me that's an enormous and formidable task and it raises the fundamental question about what criteria and what institutions we are going to use to allocate resources. Our resources are too scarce to be thrown away; they don't fall like manna from heaven. If we use them efficiently then we can pursue more social goals. The question is how are we going to do it.

If we wanted to know in advance what the outcome was going to be, we would have to have a very highly planned economy. The alternative is to let market forces make those allocative decisions. I agree in principle with the view that that creates an enormous amount of uncertainty in the world, and people are unsure about whether they are going to be employed or not or what prices they are going to pay for the goods.

But it seems to me that the market is more likely to be accepted as an allocative device if we can create an environment where people have faith in redistributive devices. In other words, we compensate people after the event if we want to. And I'd rather hear a view that it's better to build up that feeling in the community than to go the other route and say that we always need to know in advance exactly what is going happen.

**Cairns:** When I say that people ought to know in advance, I'm not being unreasonable and saying that they ought to know everything in advance, but they ought to know the range of likely outcomes that would affect them. I think you have touched upon one of the understandings that people in Australia always want. They do want to see that there is a sense of equity or fairness about what is to happen, who are going to be the gainers and the losers, who will be in the plus situation and who in the minus situation as far as it is reasonable to be able to see. It is not going to be sufficient just to withdraw from that kind of judgment and say let's ignore it and go on, because it is not going to work. I am always impressed that that sense of equity, or like with like, seems stronger in Australia than in almost any other country in the world.

In respect of the air pricing system we must be acutely aware of the national and the local cross-subsidies that would apply so that the policy can be accepted by people in general. I think that there is a strain of that type running around Australia and it will apply to the acceptance of any public economic policy.

**Q:** In our discussion of risk aversion we really only mentioned the bureaucracy and the politicians, and I'm just wondering how much the regulatory structure itself has affected the airlines and other people in the business wanting to take risks in getting into the new areas. I'm impressed with what East-West has been doing recently and would like to hear your observations on the effects of the regulatory structure on the likelihood of businesses taking risks.

**Cairns:** You are right in picking me up on that with respect to this airlines case. Clearly Peter was discussing a policy position that goes back quite a long time and that, while it doesn't guarantee a rate of return, provides a fair mechanism by which normal risks — systematic risks in particular — to which business is exposed can be predicted. Consequently the rate of return is more stable and the variations are lower, and that is a consequence of the regulatory position. So to the airlines, if you like, the cost of capital or degree of risk is lower.

But you might, I think, be fair in saying we should 'speculate' (and I'm not playing with words) that there should be a bit of *quid pro quo* when there is regulation. At least there should be a partnership and diversified responsibility between government and the airlines with respect to prices, capacity, and quality. Then the discretion and hence the responsibility control nexus is broken. But this is speculation on principle. It presumes that under such a climate there is less demand for management to exercise the kinds of normal management skills, discretion, entrepreneurship, and judgment than would be called for in a risky enviroment.

**Kimpton:** I want to make two comments because I think there are some assumptions being incorporated in people's approaches to this topic, and perhaps a slightly different view of those might be of some benefit.

First of all, I want to talk about what people refer to as the 'two airline system'. It has been suggested a number of times today that this system got tighter rather than looser when it was renegotiated in 1981. In my view that is not quite the correct assessment of the situation. There were three major changes made to the airlines agreement when it was renewed in 1981. Incidentally, these are my views rather than the views of my employer. First, access to trunk routes was opened up to regional operators whose prescribed routes connected trunk route centres. But let's avoid talking in the legal terms and talk in terms of examples. What the agreement really does is to allow East-West, for instance, who services Sydney to Albury and then a connecting service from Albury to Melbourne, to carry passengers all the way through rather than just between Sydney and Albury, get them all off, then Albury to Melbourne, and *vice versa*. The number of passengers they are able to transport in that way is

controlled by the agreement, and it is limited to, and this is not the exact legal expression, a minority of passengers. But it is a step forward in terms of allowing regional operators access to trunk routes, so to me that is the first area where the opportunities for competition were increased. I think it is probably common knowledge that East-West was seeking to exploit this increased level of competition allowed.

The second area where competition was enhanced in quite a broad way was that freight was completely taken out of the scope of the agreement. Air freight is no longer subject to the arrangements contained in the airlines agreement. And that has had all sorts of impact on all types of operators in terms of enhancing the degree to which they can suit business to their areas and offer competitive pricing strategies to obtain business.

The third area where competition was enhanced was in the degree of competitiveness between ourselves and TAA as trunk route operators. Under the old system, there was a requirement that at virtually all times the fares charged by Ansett and TAA be the same. So we moved as one with respect to core fares and discount fares. But the 1981 agreement does in fact allow and encourage Ansett and TAA to be innovative in the area of discounting. And I like to think in fact that we are. Quite frequently one or the other of the trunk route operators is first into the marketplace with a new fare. Subsequently that fare may be matched by the other trunk route operator. Or one or the other of the trunk route operators may in fact offer a discount that isn't matched by the other trunk route operator.

It seems to me worth drawing attention to those changes because they are often overlooked, and when talking about a two-airline system I think we are not doing justice to the legislative arrangements. In fact I think we are talking about perhaps a two-and-a-third or a two-and-a-quarter airline system. And if you look at that in terms of historical continuum it is a move towards deregulation.

I also want to say that I found today very useful. I think I probably reflect the opinion of other people from the airlines industry who are here today because those of us who work in the industry don't perhaps have as many opportunities as we should to hear our industry talked about by analysts from outside. Having said that though, I believe that we need to look for opportunities to explain ourselves better to those of you who derive your livings as economists in universities and other places, to give you a better understanding of the operational constraints within which we have to work.

Let me just give two examples that showed up today. One was the area that Rob Elder of the DOA talked about in relation to Peter Forsyth's paper on the Sydney airport: the sheer operational difficulties of auctioning and allocating slots, given the logistical difficulties facing the international airline operators. Those difficulties are of course a function not

only of their route structures and wherever their journeys start or finish but also of the curfew that operates at Kingsford Smith Airport. So in fact you must compress a lot of activity into a relatively small space of time and these things need to be understood in looking at how space or time slots at Sydney's Kingsford Smith Airport ought to be made available.

The other area where I feel that the sharing of experience or views between the industry and the economists would be helpful is in this question of cost. Peter Forsyth's first paper started from the assumption that a very high proportion of airline costs are fixed. We wouldn't necessarily share that opinion. In our experience there is a very complex interaction among variables such as capacity and aircraft type, route, demand at a certain time of day, or even for that matter not flying a particular route, and this interaction means a much larger variability of costs than is generally perceived.

So the assumption that a very high proportion of costs in the airline industry is fixed is not borne out by our experience, and it is not borne out by the way we approach the discount fare question in our operations. We avoid for instance discount fares that could cause us to expand capacity in a situation where we can otherwise reduce it and reduce the costs that go with it — unless of course the fares cover the costs of that additional capacity.

That is probably as much as I ought to say but I am one of the last two remaining airline respresentatives here, and I think we ought to thank the CIS for putting this conference on. It has been a useful exercise and I hope that it leads to further exchanges of views over the months and years ahead.

**Rob Elder (DOA):** I want to make a plea on behalf of the policy advisers among us. We don't have the luxury of going to our political masters and asking them to take all their clothes off and jump into Lake Burley Griffin in the middle of winter, safe in the knowledge that the market forces will sort out their problems. Without that alternative we have to look at developing a framework of where we are going from our own experiences.

I was somewhat disappointed this morning. You developed a lot of thoughts on American deregulation practice and experience, and then took it one step towards what might happen in Australia. But then when Kevin Cairns raised the question of hubs and so forth the discussion virtually stopped and ended with a suggestion that that was the airlines' problem. And then it wasn't the airlines' problem but somebody else's problem. The policy adviser is stuck in the middle of all that. What I am really making is a plea for is some more work to be done by the economists on these issues to give us some more guidance, so that the debate on deregulation becomes more rational and more open and more

people get involved in it. I think that way we are less likely to make mistakes, whatever moves are made in the next few years.

**Lindsay:** Others here are a little bit more familiar with the American experience, but would an American policy adviser of about 15 years ago have asked the same questions about hubs? And if so what would have been the answer? I don't know that it would have been predictable what hubs would develop, and certainly what hubs have developed recently by even some of the very small airlines. I just noticed in the press very recently that Piedmont, which operates in South Carolina, has developed a very small hubbing/spoke system of its own networking into Delta. Taking up what Chris has said, such hubbing would be fairly unpredictable.

**Findlay:** The US experience is an obvious source of data on what general direction things will take. Now whether to aim for a full scale analysis of what it will be like with deregulation seems to be an investment decision. Is it going to pay off, or how much is it going to contribute to reform? That sort of work is part of the strategy for reform. What I was trying to say was that, in the longer run, we could move to an environment where we don't need comprehensive planning services but could simply recognise the equity goals that Kevin Cairns rightly stressed.

**Ball:** I wish to respond in part to what Kevin Cairns said, which I interpret as a request to talk about specifics rather than about principles or about the way markets or deregulated enviroments work. I don't think this is a realistic request to make. It is like a request to give us the sort of specifications that an entrepreneur would show to his bank manager in coming up with specific proposals. One of the features of the unregulated market is the extent to which individuals engage in trial and error or engage in the nonplanning sorts of solutions that Chris was referring to. And it's just not possible to specify in advance what the end result of all that will be. People try something, they don't make money, in other words consumers don't support them, they abandon it, they try something else. There is a lot of uncertainty at the outset in an unregulated environment that just cannot realistically be prespecified. So to ask people here to write down what would happen in an unregulated market is not realistic. I think it is a totally unfair question.

**Elder:** We are not looking for details, but also we can't really work within the framework of just continuity of the status quo and the introduction of a deregulated environment. There must be something in between.

**Ball:** Let me say something about the Australian political structure that makes it even harder to speak about changes in the system. It was mentioned this morning — the fact that we have no political entrepreneurs, or at best very few. The only way a new issue, a specific issue can emerge without widespread support in our political agenda is for a splinter party to arise, as did the Australian Democrats. Our politicians almost always vote on party lines. In the US you can get politicians to cross the floor. When they are involved with a particular issue, where there is a sufficient constituency, a politician or set of politicians can be entrepreneurs in representing that constituency and the issue will arise in the Congress. That has happened around deregulation of various industries.

I understand that you are in a very uncomfortable position because it is very difficult to see a widespread political constituency for deregulation.

**Margaret Starrs:** I would have thought from what we have heard here today that if evidence were needed to convince the Minister that deregulation was the way to go it could be found in what we have presented today here. We had Michael Kirby telling us that Australian airline costs are 55 per cent higher than American airline costs, and that in the American situation that there are a lot of promotional fares — I mean, I don't see that the evidence isn't there if you want to make a case.

**Forsyth:** Following on from this, if you look at the debate in the US for deregulation, you'll find that there were various people saying that this would happen or that would happen. But if you look at the range of fairly serious economic studies on the likely impact, sure they got some things wrong but the broad picture was very much as they predicted. Admittedly some things they didn't predict so well, one of these was the pressure on pilots' salaries. But more broadly speaking the analysts did pick the effects pretty well.

**Starrs:** I think one of the interesting results of the American deregulation experience, and it was a function of the regulatory framework in America, was that there was an increase in load factors, although the load factors in America are still lower than Australian load factors. And that always worries me when I think about deregulation. Will that be an outcome of Australian deregulation? That would therefore be a cost increase really, wouldn't it?

**Forsyth:** We often hear from people who don't think deregulation in Australia and the US are comparable, and certainly you can't compare everything. In fact I think in terms of load factors they are not comparable. The main reason is that in Australia we have a fairly flexible

scheduling system, making it easier to put extra flights on or drop some flights out, and that means it is possible to have higher load factors. In America they tend more to just schedule three flights and that's that. This makes it more difficult to get high load factors.

**Elder:** I have found the last twenty minutes or so fascinating. We haven't mentioned the consumer once in that time. I thought the whole thrust of deregulation was aimed at the ultimate interest of the consumer.

**Gannon:** I understand and I think Rob Elder is right in characterising the problems from where he sits as a policy advisor. One way to repeat the point he made is to ask, when he goes back to Canberra what useful piece of information does he take out of this kind of discussion? I don't necessarily mean deregulation or not deregulation but information that points to performance or changes or how to change the current situation.

There is an inherent conflict, which I tried to bring out, in the politician who wants to know within reasonable bounds what happens if I do something? Why should I do it? And I guess just observing the discussion one would have to conclude that so far the information that is around is not adequate, as perceived by policy advisors and/or policy makers, to generate change. I know that's a generalisation but I think that if a problem persists it presumably means it is not sufficiently documented as seen by those in power. Either that or the consequences are reasonably well perceived and we are back to that gainers and losers and redistribution question. So is it inadequate information and risk aversion, or is it redistribution — or is it that the performance as perceived by the people of Australia is not that far out of kilter. I have tried to make the point that it is the initiatives and evaluations in the long term that the East-Wests and so on make that do arouse and call for some decision on whether any action is needed or not. I just wonder whether out of this any useful information will go back to Canberra on this issue about how the industry is dealt with in the future.

**Lindsay:** The CIS is trying here today to provide neutral ground where we can all get together. When we set this particular forum up we invited all the people we perceived as interested in the aviation area to participate and if possible to give papers or comments. The people who gave papers today are those who accepted our invitation. I would like to have had others as well.

In the future we will be looking at other policy areas and again providing this sort of forum where ideas can be exchanged.

# INDEX

Accounting, techniques to minimise losses, 46
*Air Fares Committee Act*, 101-102
Airlines Agreement of 1981, 34
Airports: allocation of traffic between, 80-81; disadvantages of second, 79; management of and competition, 24; need for a second in Sydney, 77-85; problems in locating, 89; as a sunk cost, 7
Albon, R., and M. Kirby, 23
Alchian, A., 42
Allocation, of traffic between airports, 80-81, 83, 87-88, 103, 105-106
Amos, P., and R. Bullock, 78
Ansett: access to domestic routes, 34; competition with TAA, 105; financial performance of, 41; fleet mix, 36, 46
Ansett Transport Industries, 52
Auction, of airport slots as rationing device, 80-81

Bailey, E., 7, 58
Bailey, E., and A. Friedlaender, 7
Bailey, E., and J. Panzar, 4, 6, 58, 72
Bankstown airport, 87
Barriers to entry: and contestability, 7; cost of developing routes as, 58; on South Australian routes, 63; sunk costs as, 56; under US regulations, 14, 15, 18
Baumol, W., 7, 56, 57
Baumol, W., and D. Bradford, 45
Bradford, D., and W. Baumol, 45
Brogden, S., 6
Bullock, R., and P. Amos, 78
Bureau of Transport Economics, 55

Cabotage, 34-35
Capacity, of an airport, 80
Charter services: concentrated at second airports, 81; under deregulation 22, 64-71
Civil Aeronautics Board, 13, 14, 15
Coat, J., and M. Greening, 6
Cohen, M., 19
Commuter airlines: conditions in Australia for, 44; under deregulation, 21, 64-71; effects of recession on, 41
Competition: in Australia, 23, 62-63, 104-105; and contestability, 3, 7, 8, 56, 71; and fares, 18, 58, 62-63; and performance, 98; and scale economies, 6; in South Australia, 59-63; in the US, 13, 15, 16
Congestion, as a rationing device, 80
Contestability: and competition, 3-9, 56; definition of, 7, 56-57; and efficiency, 72; and profit, 57
Cost: in Australia vs the US, 15, 30; and available capacity, 41, 42; characteristics of airline, 3-6; congestion as a, 80; in a contestable market, 57; under deregulation, 17, 19, 29-30; and distance flown, 3-6, 17-18; and fares, 17-18; fixed and variable, 42-43; marginal, 41-42, 57. *See also* Fixed cost; Variable cost
Cross-subsidisation: in Australia, 96; and costs, 45; and fares, 50, 102; and the IAFC, 47

Demand: for airport space, 80; under deregulation, 44; over the next 20 years, 79; and planning, 42
Department of Transport, 25
Depreciation, 46
Deregulation: arguments against, 23; arguments for, 108; in Australia, 7-8, 24-25, 35-36, 108; and costs, 29-30; implementing, 98-99; and profits, 19, 43-44; and safety, 16; in the US, 7-8, 13-28
Discount fares: under deregulation, 17; and the IAFC, 49, 50, 102
Domestic, vs international aviation, 33-37
Douglas, G., and J. Miller, 13, 14
Dubuc, C., 15

East-West, 3, 104-105
Economies of scale. *See* Scale economies
Efficiency: and contestability, 56, 72; and deregulation, 23, 45; how to achieve, 98; in traffic allocation between airports, 80, 81
Elasticity: of demand, 43, 45, 57; of income, 43

Entry, barriers to. *See* Barriers to entry
Environment, 78
Essential Air Services Program, US., 16, 21

Fares: and competition, 18, 58, 62, 63; and costs, 17-18, 34, 46, 50, 51, 88; and deregulation, 15, 17-18, 69-71, 105; and the IAFC, 47, 95, 101; research on, 97; in the US., 14, 15, 17-18
Findlay, C., 58
Fixed cost: and contestability, 6-7; flexibility of, 42; proportion of total cost, 106
Fleet mix, 21, 36, 59
Forsyth, P., 4, 44
Forsyth, P., and R. Hocking, 23, 24-25, 58
Freight, 5, 105
Friedlaender, A., and E. Bailey, 7
Fuel, cost of, 17

General aviation, 79, 83
Graham, D., and D. Kaplan, 19, 20, 21
Grenning, M., and J. Cout, 6

Hocking, R., and P. Forsyth, 23, 24-25, 58
Holcroft, W., 44
Hubs: under deregulation, 20, 29; international, 36; serving small communities, 5, 29; in South Australia, 60

Independent Air Fares Committee: and costs, 50, 62; and discount fares, 49, 50, 102; and fare reviews, 101, 102; and fares, 51-52, 62, 88; and profits, 41, 49, 51-52; terms of reference, 46-47, 49-50; and Western Australia, 33-34
Inefficiency, 14. *See also* Efficiency
Input prices index, 17
International aviation, 33-37, 52
Intrastate aviation, 52

Joint costs, 51

Kahn, A., 14, 17, 18, 98-99
Kaplan, D., and D. Graham, 19, 20, 21
Keeler, T., 13, 14
Kennedy, E., 13

Kingsford Smith Airport, 82-83
Kirby, M., 3, 6, 19, 23, 24-25

Labour: cost of 15, 29-30; effect of on deregulation, 24
Lauriac, J., 20
Leasing, 72
Levine, M., 14
Little, I., and K. McLeod, 78
Load factors: and costs, 41-42, 63; under deregulation, 14, 18, 108; and route density, 17-18
Losses, 46-47

McLeod, K., and I. Little, 78
Market, Australia vs the US, 99
Miller, J., 42
Miller, J., and G. Douglas, 13, 14
Mills, G., 78, 79
Monopoly: in access to airports, 7; and contestability, 8, 57, 71; natural, 3, 57-58; regulation of, 16, 44, 56

Networks, 6, 19-21, 60
Noise, airport, 77, 78, 82

Overcapacity, 36. *See also* Fleet mix

Panzar, J., and E. Bailey, 4, 6, 58, 72
Panzar, J., and R. Willig, 57-58
Pascoe, F., 58
Peak pricing, 18
Policy: how to implement change in, 98-99; and the public, 101; and research, 106-107
Price: of airport use, 80, 81; and cost, 41-42, 43, 45, 57; and cross-subsidisation, 50; and profit, 46-47. *See also* Fares
Pricing policy, 7, 15, 101-103
Profits: in a contestable market, 57; and cost, 42; under deregulation, 19, 43-44; regulated, 44-45

Qantas, 34, 36

Ramsey-optimal prices, 57
Rate of return pricing, 47, 51-52
Recession, effect of on airlines, 19, 41-47
Redistribution, 95-96, 98
Regulation: current, 7; development of in Australia, 93-94; disadvantages of, 23, 58, 97, 99; effects of, 14-15, 44-45,

104; of a monopoly, 56; in South Australia, 55; in the US, 13-14
Rents, 56, 57, 96
Research: cost-effectiveness of, 107; directions for, 98, 99; on domestic airline industry, 97-98; goals of, 99, 106-107
Residuals, 51
Risk: of accidents, 96 (*see also* Safety); aversion to, 98, 104; bureaucratic aversion to, 96-97; and profits, 44; research on, 98, 99
Roskill Commission, 78
Routes, 17-18, 20

Safety, 16, 22, 96
Scale economies, 3-6, 41-42, 58, 79
Seating density, 18
Service: under deregulation, 18-19, 64-71; range of, 5; to small communities, 20-21
Slots. *See* Allocation
South Australian airline market, 55-73
Stackhouse, J., 102
Stage length, 20
States, authority to regulate air transport, 55
Subsidies, 14, 16, 21
Sunk costs, 7, 56, 58

TAA: access to domestic routes, 34; competition with Ansett, 105; financial performance of, 41; fleet mix, 36
*Time*, 17
Two-Airline Policy: after 1981, 104-105; and cabotage, 34-35; characteristics of, 3, 23, 95, 97; effects of, 95-96; and international aviation, 33, 34, 35; origin and development of, 93-94

Unions, 30
United States: and airline deregulation, 7-8, 13-28; and bubbling, 5
US Airlines Deregulation Act of 1978, 15-16

Variable costs, 42

Weingast, B., 24
Welfare, 57
Western Australia: and deregulation, 35-36; and domestic vs international aviation, 33; position of on airline policy, 49
White, L., 6
Wide-bodied jets, 18
Willig, R., and J. Panzar, 57-58

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# CHANGES IN THE AIR? Issues in Domestic Aviation Policy

**Contributors**
**Christopher Findlay ■ Michael Kirby**
**Frank Gallagher ■ Peter Forsyth**
**David Starkie ■ Margaret Starrs**
**Colin Gannon**

Aviation policy in Australia has been closely regulated by the government. Recent reviews of the Two-Airline Policy have resulted in some relaxation of government control but the industry still suffers from inefficiencies and relatively high costs. The papers in this volume examine various aspects of domestic aviation in Australia in light of economic research and attempt to suggest directions for improvement, in terms of both internal airline efficiency and passenger comfort and convenience.

**Christopher Findlay** uses the innovative economic concept of 'contestability' to show that there is little danger of one airline assuming a monopoly position in Australia if aviation were deregulated. **Michael Kirby** describes the experience of US airlines and passengers with deregulation. **Frank Gallagher** discusses the possibility of integrating domestic and international aviation. The effects of recession on airline costs, revenues and profit are discussed by **Peter Forsyth**. **David Starkie** and **Margaret Starrs** use the South Australian airline market to illustrate what can happen under deregulation and free competition. **Peter Forsyth**'s second paper examines whether there is a need for a second international airport in Sydney. And **Colin Gannon** looks at the results of regulation and the likelihood of change.

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