

Deregulation in a low density market: the case of South Australian air transport

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Abstract:

South Australian intrastate aviation was effectively deregulated in 1979. The main results of this have been moderate fare increases and smaller planes offering higher frequencies over a wider range of destinations. This experience suggests that lack of density need not cause problems in a deregulated environment. The South Australian experience may provide insights into the ramifications of domestic trunk deregulation.

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Introduction

The purpose of this paper is to analyse the effects of the removal of economic regulation in South Australian intrastate aviation in 1979. The changes that occurred after effective deregulation in South Australia are an interesting case study, and may provide insights, on a smaller scale, to the ramifications of domestic trunk deregulation.

In particular the results are relevant to those routes where concern has been expressed because of their relatively low density. For example, it has been suggested that some routes might be subject to the exploitation of market power by a single operator or be subject to a decline in service quality following deregulation. The so-called "small community problem" is one which has often been used to argue for continuing regulation. The South Australian experience, with its relatively low-density regional network, provides some evidence on the treatment of small communities in the absence of regulation. Later in the paper, we also make a comparison between an analysis of the small community problem, based on US experience, and compare it to the SA results.

This paper is a more accessible version of a larger report on these and other issues related to deregulation, prepared for the South Australian Director General of Transport (Crowley and Findlay, 1990). The research on which it is based uses a new and extensive database of South Australian intrastate aviation capacity, patronage, fare and demographic information for the years 1978, 1983 and 1987, compiled by the Office of Transport Policy and Planning. Work is underway to extend the data base to other states for comparative analysis.

Economic regulation and the changes in 1979

Prior to 1979, the Federal Department of Aviation exercised both operational and effective economic control over services within all states. The economic control took the form of controls over entry and fares and indirect influence on service levels. Entry was controlled by licensing single operators to routes or groups of routes (Bureau of Transport Economics, 1980). Fares were controlled by the Commonwealth Department of Aviation which set fares according to predetermined formulas unless otherwise justified. Service levels were influenced by licensing of aircraft of particular size, which in conjunction with patronage levels, determined frequency.

Based on recommendations of the 1978 Domestic Air Transport Policy Review, and in order to encourage third-level carrier operation, the Commonwealth restricted its licensing role in intrastate aviation to operational matters from 1979 (airworthiness, crewing, safety standards, etc.) By not introducing local state economic controls on

intrastate aviation at that time (other states had pre-existing controls), South Australia and Victoria effectively deregulated intrastate air services.

The policy change was deliberate, 'open skies' being a commitment of the then State government. The State had appeared to be well served by the regional carrier Airlines of South Australia (ASA), which operated turbo prop aircraft to seven regional centres, and a number of small airlines which operated small aircraft to Kangaroo Island, the Eyre Peninsula and the far north of the State.

After 1979, other airlines were free to compete with the regional carrier in terms of routes and service levels, whilst fares remained determined by the Commonwealth Department of Aviation until 1981 when the Independent Air Fares Committee assumed control. The change in national regulations in 1979 of most significance was that entry rules were determined route-by-route (i.e. between prescribed airports) rather than by operator's choice of aircraft size (exemptions could previously be granted for the use of smaller aircraft via supplementary licences). This change meant that the Two Airline Policy only applied on interstate routes whereas previously it applied on all routes on which operating aircraft were of a sufficient size.

Reviews of the 'open skies' policy

By 1983, the impacts of 1979 regulatory change were observed to include (Starkie and Starrs, 1984):

- a significant increase in the number of services offered in the South Australian air passenger market;
- the development of new routes, served by one firm, providing a number of centres with air transport services for the first time;
- an increase in the frequency of service to other centres;
- re-scheduled departure and arrival times to fill empty time slots;
- more promotional fares in the most competitive markets;
- evidence that fares per kilometre did not vary significantly between single - or multiple - operator routes.

The Starkie and Starrs analysis was based on a time period in which ASA continued to operate. In the same period, the network of O'Connor Airlines included a number of small regional towns. It is a feature of the South Australian experience, however, that significant changes in airline ownership, viability and service levels have occurred frequently.

The most significant change since 1983 was the cessation of the operations of ASA in June 1986 due in part to the loss of the Moomba gas fields charter contract (to Lloyd Aviation) and sustained losses on scheduled services since 1979. Since ASA's withdrawal, the intrastate market has been served only by commuter operators. Further, O'Connor significantly rationalised its network in 1984.

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It is timely to reconsider the impact of the 'open skies' policy in light of these events. We have organised our review of the policy under the headings of i) entry, ii) fares, and iii) service quality

Entry

The South Australian aviation market appears, despite rapid turnover, to be able to support at least ten commuter airlines. The names, owners and aircraft used often change, but the network coverage and number of operators appears to have reached an equilibrium.

Major changes in airline ownership and existence since the Starkie and Starrs (1984) analysis are as follows:

- 1983 Termination of TRANS-REGIONAL services (financially unviable).
- 1984 Loss of TNT bank contract by O'CONNOR, reducing the number of routes served by this airline from 16 to 2.
- 1985 Commencement of services by KENDELL (which took over many ASA routes in 1986) and LLOYD.
- 1986 Termination of AIRLINES OF SOUTH AUSTRALIA, OPAL AIR, MURRAY VALLEY, and STATE AIR services (all financially unviable).
- 1986 Resumption of MURRAY VALLEY services under the name SUNSTATE (refinanced).
- 1987 Resumption of STATE AIR services (refinanced).
- 1987 Commencement of LINCOLN services.
- 1988 Following TNT-News acquisition, rationalisation of LLOYD's SA Services (to avoid competition with Ansett-associated KENDELL).

As a consequence of these changes, the number of operators rose from 6 in 1978, to 11 in 1983 and 1987, and to 12 in February 1989 (Air Central Eyre, Air Transit, Albatross Airlines, Augusta Airways, Eyre Commuter, Kendell Airlines, Lincoln Airlines, Lloyd Aviation, North West Airlines, O'Connor Airlines, State Air, Sunstate Airlines).

The network of ports served, rose from 24 in total (direct ex Adelaide and via intermediate destinations) in 1978, to 32 in 1983. Of the 32 ports served, 12 were served via intermediate destinations. The total number of ports served dropped back to 24 in 1987, with a significant fall occurring in the indirect services. When only those ports served direct from Adelaide are considered, the network has remained remarkably stable at 19 or 20 ports served. The high total number of ports served in 1983 was due to a very wide coverage by O'Connor Airlines, which flew to a considerable number of intermediate ports on the Yorke and Eyre Peninsulas.

This rise in ports served in 1983 and subsequent drop is one important consequence of the removal of economic controls in 1979. Intermediate stops became

attractive to commuter operators as a method of building a network, especially since the ultimate destinations (the major regional centres) were already open to competition. However, the increase in competition meant that any cross subsidies to the provision of services to the small centres could not be sustained. As a result, there was some rationalisation of services to intermediate points in the later period. The only new services to remain in 1987 which were not present in 1978 were those to the new town of Olympic Dam (adjacent to the Roxby Downs mine) and to Tumby Bay and Streaky Bay, each of which are close to another regional centre, and each of which is served by a single operator.

Another issue raised in relation to deregulation is the extent to which the incumbent trunk carriers have built links with regional and commuter operators to provide dedicated feeder services. The two airlines to which this is relevant in SA are Lloyd and Kendell, both related to the Ansett group. In 1987 they accounted for approximately 76 per cent of total passenger movements. Thus despite having direct connections with only 2 of the 12 operators, the Ansett group now has a substantial interest in the regional market.

Fares

In the period since entry deregulation, real air fares on SA intrastate routes have risen (in weighted average terms) from about \$18 in 1978 to about \$22 in 1987 (all measured in 1973 prices). This is a rise of about 22 per cent over 10 years. There are a number of points to make about this result when making inferences about the impact of deregulation on the cost of travel.

First, over the past decade the nature of the travel task has changed. In particular, average passenger stage length has risen by about 13 per cent, reflecting a shift in the location of travel demand, and so it would be expected that the average fare would also rise in real terms by at least that amount.

Second, the increase in fares in S.A. compares very favourably to changes in fares on other short-haul routes. According to the Bureau of Transport Economics *Transport Indicators Bulletin* these fares rose in real terms by 56 per cent between 1978 and 1987. The bulk of this rise is accounted for by adjustments to the short-haul fare formula in 1981, suggested by the Holcroft Enquiry. Since 1981, real short-haul fares have remained relatively constant. These results indicate that extracting the State from the regulatory process has led to a much smaller rate of increase in fares in real terms than would otherwise have been observed.

Third, these comparisons are based solely on economy class fares; further comments are made in the next section on pricing strategies in competitive markets and on the relevance of using economy fares to evaluate the performance of the market.

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Fourth, these comparisons refer only to money fares. Other quality aspects of service which are within the control of the airlines, such as frequency and load factor, and average aircraft size, are also discussed in the next section.

One interesting question is whether the structure of the market influences the level of fares; for example, if there were two routes of equal distance, would routes on which there were more operators have lower fares?

A previous test of this relationship in the SA market (Starkie and Starrs, 1984) found that distance was the main determinant of fares and that the number of operators was not significant. The same method of analysis was applied to the data in the Data Appendix to Crowley and Findlay (1990) which extended the time series to 1987.

The Starkie and Starrs results were confirmed - that is, there is no significant difference between fare levels on routes with one operator and those with more than one operator, once allowance has been made for distance. (Details of the regression results are available from Paul Duldig.) The implication is that the threat of entry by new competitors has proven to be a sufficient constraint on any attempts to exploit market power on single operator routes.

An attempt was also made to allow for aircraft size as a determinant of fares. Larger aircraft are cheaper to operate and hence fares can be reduced by using them, but only at the cost of lower frequency. Aircraft size was found to be important only in the final year of the data set. We discuss the relationship between aircraft size and fares again below.

One complication is that this analysis was based on economy fares. Other fares, such as advance purchase (APEX) fares, are offered at a lower price with some restrictions attached. The purpose of offering a range of ticket types is to fill available capacity more efficiently while still leaving some seats for those who have to travel at the last minute. In competitive markets, where airlines must maximise seat occupancy to cover costs, there tends to be a greater emphasis on price-sensitive traffic, the range of fares tends to be greater, and the average fare paid falls below the "economy" rate. The likelihood therefore is that, as the degree of competition increased on S.A. routes, the average fare would be increasingly over-estimated by the economy fare.

Crowley and Findlay (1990) examined the range of fares available for selected routes in S.A. They found there was substantial variation in the range of fares between routes (see their Exhibit 4.6) but suggested that the range of fares available did not appear to be directly related to the number of operations on a route. Instead, they suggested the range of fares might be related to the variations in aircraft size. This possibility was previously mentioned in a Bureau of Transport and Communications Economics (1988) report. The implication is that operators might be competing by testing consumer preferences for different aircraft size/frequency combinations. Searching among these price/quality trade-offs, rather than simple price cutting, may therefore be the reason for the different experience of ranges of fares on selected S.A. routes. This experimentation is inevitable under deregulation.

Service levels

Major changes in service levels have occurred in aircraft size and frequency since deregulation. Service levels were fundamentally affected by the entry controls, because one of the instruments used to control entry was aircraft size itself. Prior to 1979, the distinction between the restricted entry routes and those open to supplemental licences was determined by size of aircraft. Airlines of South Australia remained in the more protected environment of the 'Two Airline Policy' by operating larger aircraft on S.A. routes. When the policy was changed in 1979 to control entry between prescribed airports, ASA was exposed to potential entry, as intrastate destinations were not prescribed. If the size limitation had promoted the use of larger aircraft, it would be expected that aircraft size would decline when the controls were relaxed. Average aircraft size over the whole system has declined from 22 seats in 1978 to 15 seats in 1987.

Distance travelled, either measured in terms of plane kilometres or seat kilometres, has increased rapidly since 1978; the number of seat kilometres has more than doubled and the number of aircraft departures per week has risen by 81% since 1978.

More trips per week means greater frequency and therefore a greater likelihood of finding a flight at a preferred time. This dimension of service quality has improved.

Load factors have also fallen. The average load in the system was 64 per cent in 1978 and 54 per cent in 1987. This substantial fall in loads implies an increase in service quality, since there is less likelihood that a flight at the preferred time will be full.

In summary, while average aircraft size has fallen by nearly a third since 1978 (and nearly halved since 1973), frequency has risen and load factors fallen. These outcomes suggest that the regulatory process prior to 1979 had the effect of severely distorting the available combination of aircraft size, frequency and loads. That system, we suggest, led to a bias towards a choice of relatively large aircraft. Consumer preferences appear to involve a shift towards smaller aircraft, despite the rise in costs per seat/km, in return for higher frequency.

Passenger numbers have changed little in the period since deregulation, rising from 127,000 to 134,000 between 1978 and 1983 then falling to 125,000 in 1987, (one-way patronage, ex-Adelaide). Air transport has however maintained its share of total traffic of about 17 per cent, compared to 5 per cent for rail and 78 per cent for bus transport. Contributing factors to the lack of traffic growth may have included the real fare increases, although we qualified this result in the previous section by noting that economy fares were an unreliable indicator of real changes in prices and that stage lengths have increased on average. In addition, any rise in real fares will have been offset to some extent by the improvements in service quality noted above. The extent

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to which this has occurred depends on consumer evaluations of higher frequency and lower load factors

Crowley and Findlay (1990) note that a more important influence on the volume of traffic may have been the lack of growth in the level of economic activity in rural S.A. According to data from the Centre for S.A. Economic Studies, real household income in rural S.A. has changed little since 1976 while real urban incomes have risen by 40 per cent. Also data on travel by other modes suggests that the overall level of travel demand in rural S.A. has been stable.

Small Community Problem

SA routes are relatively low-density. For example, in 1987, there were 24 points served in the network in 1987, and total passenger numbers (one way from Adelaide) in that year were about 125,000. In the NSW system in 1987, there were 46 points served (about twice as many as in SA) and total traffic ex-Sydney was about 500,000 (about 4 times as many).

Despite these low density levels on average in SA, the quality of service in the regional system has improved in terms of flight frequency and load factors. These changes have come about as a result of a shift to smaller aircraft.

The SA results match those of the US (see Meyer and Oster, 1984). Analysis of demand for commuter travel in the US indicates that commuter travellers are highly sensitive to trip times, since for the distances involved air travel is a close substitute for car travel. Consistent with the importance of trip time and convenience, the US results also show that commuter travellers are highly sensitive to frequency, indeed more so than they are to aircraft size. More frequent departures using smaller aircraft are preferred to the same capacity on larger aircraft with fewer departures. These sorts of preferences are reflected in the SA experience.

Another important result of the work on US regional and commuter markets is that it appears that there is a broad range of routes of varying density and distance combinations where commuter aircraft are more efficient than jets. The key for commuter management is therefore to match aircraft to market density (Meyer and Oster, 1984, Ch. 4).

The implications of these results are that in a deregulated environment, there is scope for new entrants to take over thinner routes by using smaller aircraft with higher frequencies. In these terms, service quality to small communities could actually improve, as deregulation and freer entry permits new suppliers to experiment with new combinations of aircraft size and flight frequency. While aircraft size is smaller, the demand studies indicate the costs of the loss of amenity are offset by the gains from convenience and time saving.

The process of the takeover of routes by commuter operators is not unique to S.A. It has also been happening in other networks, driven by the combination of the preferences of traveller and the operating costs of smaller aircraft on low density routes. It is concluded by Meyer and Oster that for these reasons, the "small community problem" has 'proved to be not much of a problem' (p. 78).

Conclusions

There is no evidence to suggest that the intrastate market is not performing well in the deregulated regime which dates from 1979. Deregulation appears to have corrected a distortion in the choice of aircraft that was in favour of larger types. The market process has shifted the outcome to more frequent flights by smaller aircraft. This suggests that a greater weight has been put on consumer evaluations of service quality offsetting the previous bias towards larger aircraft, which in conjunction with the regulatory system, had acted as a barrier to entry by new operators. Despite the shift to smaller aircraft, fares on S.A. regional routes appear to have risen much less rapidly than other short-haul fares in Australia. Furthermore, fares per kilometre on single operator routes appear to be no different from those on multiple operator routes.

These conclusions about the benefits of deregulation apply even though the regional S.A. routes are of relatively low density. In other words, this experience suggests that lack of density need not cause problems in a deregulated environment.

There is an important qualification to these results. They are based on cases in which, as Crowley and Findlay (1990) stress, airport congestion has not been an issue. Crowley and Findlay also report that in cases where airport congestion is high, priority in the allocation of scarce airport slots tends to be given to high-density routes. The implication is that if other regional routes in Australia suffer in the course of deregulation it is more likely to reflect the capacity of the infrastructure, and the procedures used to allocate slots, rather than the emergence of competition in the air transport system.

S.A. regional routes are likely to remain low density, although according to Crowley and Findlay (1990), this characteristic depends on the extent to which S.A. can exploit the expected relatively more rapid growth in international visitor arrivals compared to domestic tourism. A higher level of density would, of course, have a number of spinoffs for the local traveller including the scope for more operators as well as higher frequency and possibly larger aircraft as well. These benefits of density emphasise the importance of management of the inter-relationship of tourism policy and air transport developments as well as the development of appropriate infrastructure, including regional airports.

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