STUDIES ON THE ECONOMIC REGULATION
OF AUSTRALIA'S DOMESTIC AIR TRANSPORT INDUSTRY

by

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A collection of papers submitted for the degree of
Doctor of Philosophy
of the Australian National University
by submission of published work.

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To Lynette and David, and Mum and Dad.
In compliance with the requirements relating to Examination of the degree of Doctor of Philosophy of the Australian National University, I affirm that, with the exception of the joint research work reported in Papers 5 and 7, the work which follows is entirely my own.

I affirm that Papers 5 and 7 are genuinely joint research work.

R. P. Albion
ACKNOWLEDGEMENTS

I owe a significant debt of gratitude to several people for providing me with the possibility and encouragement to undertake and complete my body of research at the Australian National University (ANU).

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Finally, I must give generous thanks to my wife Lynette, whose unfailing optimism and confidence provided me with the inspiration to complete my task.
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OVERVIEW


OVERVIEW

The eight papers presented here represent the results of research undertaken over a lengthy period of time. These three papers are not necessarily in exact chronological order, there is a principal sequential sequence of the work. In particular, several of the themes and issues introduced in my earlier and were subsequently re-written, notably because of which I did developed and retained further in subsequent papers.

The major objectives of my research is to investigate and the economic aspects of the relationship between government regulation and the performance of the airlines industry, particularly with respect to the provision of passenger services.

The various constitutional, and legislative papers and policies which determined the pattern of regulation studied in my research are outlined in Appendix 1 of Paper 1. While Chapter 1 and 2 also contain similar comments with slightly more technical perspectives, from the early 1930s Australia’s aviation and transport industry has been heavily regulated. The previous legislative which being the so-called ‘direct control’ policy, since the Commonwealth Government was considered to lack the constitutional authority for direct economic regulation of civil aviation, it has chosen to control entry into the industry and to regulate the aeronautical industry selected operators by means of a variety of contractual agreements, the various aeronautical Agreements Act, together with other supporting legislation. Major features of the Direct Control Policy include: domination of the industry by two major operators in accordance with the market conditions.
OVERVIEW

Introduction

The eight papers presented here represent the results of research extending over a lengthy period of time. While these papers are not presented in exact chronological order, there is a prominent sequential element to the work. In particular, several of the themes and issues introduced in my earlier and more wide-ranging papers, notably Papers 1 and 3, are developed and refined further in subsequent papers.

The major objective of my research is to investigate various economic aspects of the relationship between government regulation and the performance of the Australian domestic air transport industry, particularly with respect to the provision of passenger services.

The various constitutional and legislative powers and policies which determined the patterns of regulation studied in my research are outlined in Appendix 1 of Paper 3, while Papers 1 and 2 also contain briefer summaries with slightly more historical perspective. From the early 1950s Australia's domestic air transport industry has been heavily regulated, the dominant feature of which being the so-called Two-Airline Policy. Since the Commonwealth Government was considered to lack the constitutional authority for direct economic regulation of civil aviation, it has chosen to control entry into the industry and to regulate the behaviour of its selected operators by means of a series of contractual agreements, the various Airlines Agreements Acts, together with other supporting legislation. Major features of the Two-Airline Policy include: domination of the industry by two major operators by means of restrictions on market
entry through prohibition of aircraft importation; control of aircraft capacity; consultation between operators regarding air services; fare setting; and the existence of a government-owned airline, Trans-Australia Airlines (TAA).

The strictly economic framework, which has been adopted in my study of Australia’s domestic air transport industry, is outlined in Paper 2 and the Introduction of Paper 3. In particular, two necessary conditions are identified for an economic efficiency justification of market intervention on the part of government. The first is to demonstrate the existence of market failure, where the market outcome differs from the socially optimal outcome, and hence where there exists the possibility of increased efficiency through government regulatory actions. Secondly, the benefits from any proposed market correction policy must exceed its costs.

Paper 2, which discusses some issues raised in de Neufville and Mira (1974), notes the irony of devoting much attention to the first requirement, while neglecting the second of the necessary conditions. It is the frequent failure to satisfy this second condition that can lead to a premature (at best), and often unjustified, call for government intervention.

Thus a comparative institution approach is needed, requiring an assessment of which real world arrangement (market or regulation, which are both, to some extent, imperfect) is better suited to the particular economic problem under consideration. To this end, some of the broad, inherent tendencies of the regulatory and competitive processes are mentioned in Chapter 7 of Paper 3.

Three broad directions can be identified in my research. These are: (a) an investigation of the existence of market failure in the airline industry; (b) an economic analysis of the impact and
performance of the Australian domestic airline industry's regulatory framework; and (c) an examination of several policy options.

Market Failure in the Airline Industry

The question of market failure in the airline industry is addressed in Paper 3, especially Chapters 1 to 5. These chapters investigate the many alleged public interest arguments as to why the market mechanism is an unsuitable method of satisfying the community's demands for air services. Such arguments include claims that competition among airlines will be destructive or wasteful, will result in many areas without services, or will lead to monopoly exploitation of consumers. Various externality arguments have also been suggested.

The validity of these arguments is seriously questioned. In fact, many of the major perceived problem areas in airline markets can be traced to the regulatory systems within which the industry must operate. Well-known examples include the past United States (US) experience with respect to excess capacity and airline re-equipment. A further case of so-called wasteful competition encouraged by the pattern of regulation adopted by air transport authorities is Australia's controversial parallel scheduling. The tendency towards parallel schedules appears to be the natural result of a system in which there are two operators and no threat of entry, all the major attributes of operators' products are identical (e.g. fares, capacity, aircraft and in-flight services), and timetabling is the most significant means of non-price competition available.

Several external benefits alleged to be associated with civil aviation are also considered, including defence, national development and fuel conservation. While there is scope for disagreement about the significance of these supposed benefits, it appears that extern-
ality problems with respect to these issues, to the extent they exist, are best dealt with directly through subsidies or other fiscal measures rather than indirectly through restrictive market control. Similarly, the potentially emotive issue of air safety is largely irrelevant to considerations of the economic regulation of airlines. Air safety objectives are not dependent upon market regulation and can be more effectively pursued through direct attention to operating standards and procedures.

As alluded to above, monopoly exploitation of consumers has been one of the most popular themes of the debate on Australian airline regulation. In Chapter 2 of Paper 3 it is argued that, not only is there a lack of empirical evidence in the literature of economies of scale in the provision of airline services, but also the nature of airline costs is such that, even if airline markets were heavily concentrated, existing operators would have little monopoly power. The underlying theory of contestable markets has been developed greatly over the last several years (see Brock (1983)) and recently applied to Australian regional airline markets by Starkie and Starrs (1984).

Paper 6 provides some further clarification of the issue of economies of scale in the airline industry by developing a concept of "scale" which more effectively utilises all the available information on the multiproduct nature of airline activities. In doing so, it is able to reconcile some of the previously conflicting opinions regarding the existence of scale economies in airlines. The estimated cost model in Paper 6 reveals substantial economies of operation with respect to load factors, aircraft size and stage length, but diseconomies associated with serving more ports and increased departures from a given port.
In analysing the question of airline market failure, the empirical experience of the airline industry, mainly in the United State of America (USA) and Australia, is used wherever possible as evidence when assessing various points of view. In particular, the US airline deregulation experience provides an important source of empirical information about airline economics and policy. However, in a book review Brogden (1981) criticises Paper 3 for ignoring the impacts of US airline deregulation and presents a view of this experience not fully in accord with my own. From this criticism and other observations it seemed clear that in many Australian circles knowledge of the US deregulation experience is often only sketchy and anecdotal in nature.

Paper 4 corrects this deficiency by surveying the extensive literature on US airline deregulation, presenting a brief summary of recent events and developments in the US industry, and commenting upon the relevance of this experience to the Australian situation. The overall conclusion from this Paper is that, while it is possible to identify both groups of winners and losers, deregulation has led to fundamental improvements in the efficiency of the US domestic airline industry through increasingly cost-based fares, network restructuring, and greater attention to production costs.

In addition, one of the important contributions of Paper 4 is to present econometric evidence on the extent of any cost reduction achieved in the US industry after deregulation. The cost model estimated in Paper 6 suggests that the costs of existing trunk and local service carriers in the USA were on average around 5 per cent lower in 1977 and 1978 than they would have been without deregulation. This result probably understates the impact on costs since it takes factor prices as given. A feature of the deregulated
US industry has been the emergence of new operators with much lower cost structures, especially with respect to labour costs.

The overall conclusion from the examination of market failure issues is that many of the public interest arguments used in the Australian debate for rejecting market forces and for supporting detailed economic regulation of airlines, as under the Two-Airline Policy, do not stand close scrutiny.

Economic Assessment of the Two-Airline Policy

A broad economic critique of the Two-Airline Policy is presented in Papers 1 and 2 and Chapter 6 of Paper 3. A pervasive feature of this regulatory system is the lack of substantial competition within the industry. Not only does the Two-Airline Policy provide the major operators with both the opportunity and encouragement to collude via its consultation facilities, but elements of the policy form obstacles to competitive behaviour. For example, rigidities in pricing policy (the use of standard fare formulae) hinder innovative attempts to penetrate new markets. In addition, the capacity determination procedures limit the ability of an operator to gain an increased market share from innovation.

This lack of competition has serious implications for allocative efficiency within the industry, which is, in particular, reflected in the small variety of price/quality options available to air travellers. These impacts are examined in further depth in Forsyth and Hocking (1980). In addition, theoretical analyses of airline markets with particular emphasis on optimal air fares and service quality are contained in Forsyth and Hocking (1978) and Findlay (1983). Some empirical information relevant to the cost/quality trade-offs in air transport is provided by the econometric results of Paper 6. In particular, the provision of frequent, scheduled passen-
ger services in smaller aircraft with low load factors is estimated to be relatively costly.

An area of further concern is the impact of the regulatory system on airline costs. Paper 1 presents a model in which average cost pricing creates an incentive for a firm to inflate or "pad" its costs of production as a means of capturing the potential monopoly profits arising from entry restriction into an industry. Using the findings of Mackay (1979) that, in the absence of regulation, average costs of the two major Australia operators might fall as much as 35 per cent, the resultant welfare loss to society is estimated to be around 50 per cent of gross industry revenue. However, this estimate is based upon fairly restrictive assumptions (in particular, the competitive rent-seeking hypothesis of Posner (1975)), with the result that it is probably better interpreted, as in Chapter 6 of Paper 3, as an upper bound of the welfare loss.

The model of cost-padding behaviour is developed more fully and generally in Paper 5. In particular, the regulated level of profits is generalised (in contrast to being zero as in Paper 1), the nature and welfare implications of cost-padding are explored in greater depth, and the application of the model to the Australian domestic airline industry is discussed further. The conclusion from the theoretical model is that under profit regulation of a firm operating in an entry-restricted industry the community will face the usual monopoly price/quantity outcome but, almost certainly, with increased deadweight losses arising from inflated costs of production.

Further empirical evidence to support the hypothesis that the control of profits through air fare pricing under the Two-Airline Policy has led to cost inefficiency in the Australian industry is provided in Paper 6, which reveals a very substantial cost difference
between US and Australian air carriers. These econometric results suggest that costs in Australia for a particular airline operation are over 50 per cent higher than the equivalent operation in the USA.

One of the peculiar features of the Two-Airline Policy is the existence of a government-owned firm in competition with a private firm. The debate regarding the effect of government ownership is examined in Chapter 3 of Paper 3, where the rationale for government ownership is questioned. In addition, Paper 7 expands the debate in two directions. Firstly, it extends the cost-padding model of Paper 5 to model explicitly the Two-Airline Policy situation. The analysis suggests that a divergence of cost incentives between public and private firms, combined with the requirement that they both charge the same fares, results in a tendency for the government-owned firm to be less cost efficient than its private counterpart. Secondly, an econometric approach is used to test this hypothesis. This approach enables explicit allowance to be made for differences in operating conditions and provides statistical assessments of results. These features are not available with the use of productivity ratios which previously have been the dominant empirical technique. The airline cost model estimated in Paper 6 is utilised to indicate that TAA's operating costs are around 5 per cent higher than those of the private operator, Ansett. However, while statistically significant, this result should be kept in perspective; the difference is small compared with the cost inefficiencies of both operators caused by the policies of economic regulation.

The conclusion of the examination of the economic performance of Australia's domestic aviation industry is that, in contrast to the apparent absence of market failure, significant areas of government failure can be identified. The industry is marked by a substantial
degree of economic inefficiency.

Policy Options for Australia's Domestic Airline Industry

The third major part of my research involves a consideration of a range of policy options available to improve the economic performance of the industry. These policy alternatives are addressed in Paper 3, especially Chapter 6, while some empirical simulation of their cost implications is reported in Paper 6. The simulation results indicate the existence of substantial potential cost savings from policy reform. For example, in addition to the results already discussed above, the potential cost savings to be gained from an elimination of parallel scheduling appear to be considerable (towards 20 per cent of total operating costs).

While my policy analysis tends to emphasise the desirability of significant deregulation, several observers of Australia's domestic airline industry recommend an "enlightened" Two-Airline Policy approach which, while recognising current shortcomings, claims that better administration of the industry within the basic Two-Airline Policy framework (most importantly, continued restricted entry) can achieve increased economic efficiency. Department of Transport (1979) is the most notable and influential example of this approach. The detailed examination in Paper 8 is highly critical of this Report, particularly its selective and inconsistent use of economic principles and its apparent bias towards increased government involvement in resource allocation within the community. It is a cause of some concern that the regulatory changes introduced in 1981 reflect the broad thrust of this Report.

Conclusion

In summary, the overall conclusion from my research is that the combination of a lack of convincing theoretical and empirical
arguments to support restrictive airline regulation, the unsatisfactory economic performance of the major airline operators under the current regulatory system, and the apparent feasibility of open market competition among airlines indicates the need for substantial policy reform in the direction of market deregulation.
1. Papers 5 and 7 were co-authored with Dr. Robert P. Albon of the Australian National University. These two papers represent the output of a genuinely joint research effort. The final product was reached by the co-authors together agreeing on the exact form of wording of each of the entire papers.
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"An Economic Assessment of Australia's Two Airline Policy",

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AN ECONOMIC ASSESSMENT OF AUSTRALIA'S TWO AIRLINE POLICY

by

Michael G. Kirby*

Abstract:

The market structure and performance of the Australian domestic air transport industry are largely determined by the Government's Two Airline Policy. Under this regulatory framework the Government has control over most factors affecting the provision of air services. This regulation and its resultant industry performance are subjected to economic analysis, where it is concluded that massive welfare costs are imposed on the Australian community.

Keywords:

AIRLINES; ECONOMIC EFFICIENCY; RATIONALIZATION; REGULATION; TECHNICAL EFFICIENCY; WELFARE COST

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The domestic air transport industry has been shaped since the early 1950s by the Government's regulatory framework. Over the years there have been several examinations of the industry's performance under this framework: for example, Goodrich (1960), Hocking (1972), Bureau of Transport Economics (1978) and Forsyth and Hocking (1978). Recently, there has been the Domestic Air Transport Policy Review [Department of Transport (1979)], and the industry has attracted much attention in the popular press.

This paper presents an economic analysis of the industry, stressing the role and effect of government intervention. Section 1 provides a brief description of the industry structure and the regulatory framework. An analysis of the effects of this regulation on industry performance is contained in Section 2, while Section 3 estimates the welfare cost on the community due to the inefficiencies caused by the regulatory framework. A summary of conclusions is contained in Section 4.

1. DOMESTIC AIR INDUSTRY STRUCTURE AND ITS REGULATORY ENVIRONMENT

The dominant feature of the provision of air services in Australia is the Two Airline Policy. Under this policy, scheduled services on the major air routes (called competitive or trunk routes) are divided, virtually equally, between two operators. These operators are Trans-Australia Airlines (TAA), which is owned by the Commonwealth Government and is operated as a statutory authority (the Australian National Airlines Commission), and Ansett Airlines of Australia (AAA), which is privately owned and operated by Ansett Transport Industries (ATI). ATI also owns and operates Ansett Airlines of New South Wales, Ansett Airlines of South Australia and MacRobertson Miller Airline Services.

The Bureau of Transport Economics (BTE) (1978, p.23) reported that, in 1975/76, approximately 95 percent of the total scheduled tonne-kilometres flown were completed by TAA and AAA; almost 87 percent were on competitive routes operated by the two major carriers, while just over 8 percent were on non-competitive routes. The remaining 5 percent of scheduled services were performed by commuters (1 percent) and other scheduled operators (4 percent).

Without doubt the most important factor influencing the market structure of the domestic air industry has been the regulatory framework which has developed over the years as an expression of government policy.

The 1920 Air Navigation Act was the first action by the Commonwealth to control air transport in Australia. This Act authorised the making of regulations to give effect to the International Paris Convention signed in 1919 for the regulation of aviation, as well as providing for control of air navigation in the

1This air industry terminology should not be confused with the economic notion of competition. Further, the industry defines a non-competitive route as one serviced by only one of the two major operators.

2Thus 95 percent of scheduled traffic was subject to capacity determination (described below).

3Includes all ATI services.

4Charter operators exempted from the need to have a Regular Public Transport licence before operating scheduled services.

5East-West Airlines and Connair.

6Summaries of the legislation relating to domestic air transport policy can be found in Hocking (1972) and Bureau of Transport Economics (1978). Goodrich (1960) describes the development of the industry and policy from its earliest days through to 1958.
Commonwealth and Territories. The powers vested by this Act, its amendments and the more than three hundred Regulations made under the Act, form the basis for regulation of air transport in Australia.

The Two Airline Policy emerged after the election of the Menzies Government in 1949. Expressing a wish not to encourage the development of a monopoly (government or private), but desiring competition in the industry, the Government thought in terms of two major operators as a compromise. To establish a system of two airline competition on the major interstate routes, the first Civil Aviation Agreement Act was passed in 1952. The aims of the policy were summarised in the Act:

...to avoid unnecessary overlapping of services and wasteful competition, to provide the most effective and economical services with due regard to the interests of the public and to bring earnings into a proper relation to overall costs.

The Civil Aviation Agreement Act 1957 established a Rationalization Committee consisting of a member from each airline plus a Co-ordinator nominated by the Minister. If the airlines cannot agree on matters such as routes, fares and timetables, the issue can be taken to the Committee where the Co-ordinator can decide the matter. The Co-ordinator's ruling is subject to appeal to an independent Arbitrator, whose decision is final. Hocking (1972, p.5) identifies the Rationalization Committee as one of the key institutions underpinning the Two Airline Policy: "it exists to make sure the operations of either airline are not allowed to interfere with the economic stability of the other, thus ensuring the continued viability of the policy". The Government saw benefit in requiring the Committee to consider public interest criteria; but the frequency of such considerations is restricted to those occasions when the two operators cannot reach a prior mutually acceptable agreement. Thus the regulatory system gives the airlines not only an opportunity to collude, but also an encouragement to do so (to avoid public interest criteria).

Another major piece of legislation was the Airlines Equipment Act 1958, which was designed to control the size and composition of the fleets. The greatest impact of this Act on the industry was via its quantitative capacity restrictions, which enabled the Government to restrict the fleets of each operator to cater for 50 percent of the traffic on competitive routes. The ultimate effect of these provisions is to limit an operator's market share of competitive route traffic. Freeland (1977, p.7) claims that each operator's market share thus is constrained to the range 48-52 percent.

In July 1977 the Minister for Transport announced that there was to be a review of Australia's domestic air policy. The timing of this review related to the expiry of the 1973 Airlines Agreement Act in June 1978. The terms of reference were:

To review the principles and administration of Australia's domestic air transport policy. Having regard to the public interest, existing Government policy ..., (and) other appropriate factors report on desirable changes to policy, legislation and/or administration designed to improve air transport within Australia ... .

7Under wartime conditions of excess demand for air services, the industry made substantial supernormal profits. Goodrich (1960) suggests that it was the memory of these buoyant times that misled the Government into believing that the market could support two major operators.

8Freeland also states that 1 percent of the market is worth approximately $5m per annum.
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The conclusions and recommendations of this review were made public in July 1978 [Department of Transport (1978)]. The general thrust of the recommendations was to retain the principle of two major airlines operating over the trunk route network and to propose changes aimed at fostering increased competition between these operators.

The most important recommendations were the continued use of import controls to maintain the Two Airline Policy and the retention of the principle of capacity control. In addition, fares and scheduling were recommended to be removed from the Rationalization provisions and the airlines were to be "encouraged" to show greater innovation in fare structures, scheduling and variety of service. However, given that the recommendations fail to alter the basic non-competitive nature of the regulatory framework, it is unlikely that this essentially "jawboning" approach will result in any significant changes in market structure or performance.

Under the current regulatory framework within which the air transport industry operates, the Commonwealth has control over the main areas affecting the provision of air services: safety, licensing, fares, timetables and capacity. This paper attempts to show that, despite the often mentioned "public interest" considerations, the purpose-in-fact of the regulation has been to maintain the financial stability and viability of the operators in the industry with little attention given to consumers or the public at large. It is argued below that this regulation has imposed serious real costs on society.

2. ECONOMIC EFFECTS OF REGULATION

2.1 Assessment Criterion

The chosen criterion for assessing the effect of regulation on the air transport industry is that of economic efficiency. The concept of economic efficiency describes a situation in which society's real resources are utilised such that wealth and welfare are maximised for the given income distribution.

Economic efficiency in airline markets requires technical efficiency (for a given quality and quantity of service, the cost of production is minimised) and allocative efficiency (optimal quantities and qualities of air services are produced and consumed). An efficient market usually will provide the consumer with a price/quality package choice.

If the conditions for economic efficiency are satisfied, then there is no alternative combination of resources that will make actual and potential consumers and producers better off. For this reason, economic efficiency is a valid objective of industry regulation. Any outcome different from economic efficiency imposes deadweight costs on society. Other policy objectives, such as defence, regional development and promotion of the airline industry, have been pursued and probably will continue to be pursued. Considerations of economic efficiency, at the very least, will give governments some idea of the costs involved in seeking non-economic objectives.

2.2 Technical Efficiency

One usually would expect profit motives to ensure technical efficiency. However the regulatory environment can have a significant influence on its level. Clearly, the less competitive the industry the greater the chance that firms with motives other than profit maximisation can survive; hence, one would expect, the greater the probability of technical inefficiency.

9Posner (1971) coins this phrase to distinguish a consistent explanation of the consequences of regulation from the stated reasons for regulation.
In addition, political considerations can have a strong influence. The Government could suffer political embarrassment if TAA or AAA was seen to make large supernormal profits (which would be expected to be available, given their protected positions in the market). Similarly, if the companies wish to maintain their position without inviting further Government interference, they have an incentive to disguise or dissipate these available rents. The regulatory framework ensures that supernormal profits are not earned, by imposing an average cost pricing rule on the industry. Within this framework the airlines can capture the available monopoly rents only by raising their costs. Thus it is likely that companies would be technically inefficient; costs effectively are raised so that supernormal profits are not visible, yet some of the available rents are absorbed by the firms.\(^\text{10}\)

All factors of production of air services should gain a share of the rents; for while managers might not have any direct personal motive in raising the costs associated with other factors, they also have a reduced incentive to resist the demands of these other factors, and hence the resulting cost increases.

There is a growing body of evidence that the Two Airline Policy has resulted in technical inefficiency. The BTE describes the financial performances of both TAA and ATI as "subdued" (in a market with demand growing rapidly at 9.3 percent per annum since 1960-61).\(^\text{11}\) Forsyth and Hocking (1978) consider several measures of technical efficiency (in particular, measures of factor productivity) and conclude that the industry's performance has been "very poor". They draw attention to the extremely high manning levels which characterise Australian airline operations. Mackay (1979) uses a regression model to estimate the underlying cost function facing TAA and AAA. This approach takes explicit account of the special operating conditions in the Australian market. Mackay estimates that appropriate changes in the organisation of the domestic air industry might reduce unit costs by as much as 35 percent. Both Forsyth and Hocking and Mackay attribute the poor technical performance to the non-competitive regulatory environment.

2.3 Pricing Policy

Under the present regulatory framework of the industry, there is no price competition between TAA and AAA. The current system of price fixing involves a fare formula consisting of a constant flagfall and a rate per kilometre; that is, fares are linear in distance. For example, in July 1978, the cost of flying economy class in a 727 was $13 plus 6.093c per kilometre. This pricing system was established in 1974 and succeeded arrangements whereby all historically-based route fares were increased on a proportional basis.

An airline's route network consists of many separate markets for air services. Economic efficiency requires that the marginal costs of providing a flight are covered in each market. However, the fare formula, which is common to all routes using the same type of aircraft, is based on the average cost of servicing the entire route network, assuming an average load factor of 65 percent. This results in a tendency towards cross-subsidisation among routes. In particular,

\(^{10}\)Douglas and Miller (1974a) also describe a process by which costs are changed through non-price competition to eliminate excess profits. However this is different to my argument. The essential point is that with non-price competition the firm effectively is offering a different product: for example, higher quality through more frequent flights. I have assumed implicitly that technical inefficiency has not resulted in any discernible increase in quality.

\(^{11}\)Bureau of Transport Economics (1978, p.38). Note that details of AAA's financial position are not available.
KIRBY: TWO AIRLINE POLICY

Low frequency routes with low load factors tend to be subsidised at the expense of high frequency routes with high load factors. This cross-subsidisation is part of Government air policy. It would appear to be based on equity considerations in which it is thought desirable that all persons are charged the same price for a given flight distance. However, it seems a perverse view of equity that makes a subset of air transport users bear the burden of providing cheap (relative to opportunity cost) transport to other users.

The fundamental problem is that prices are not permitted to represent the opportunity cost of the service provided. If they did, prices per kilometre would vary between routes, reflecting the costs involved in servicing different routes. In addition, greater use of peak load pricing would be expected. In peak times the opportunity cost of air services is higher; an efficient pricing system would reflect this. Perhaps the lower standby fares introduced in September 1978 could be interpreted as a form of peak load pricing, since in effect they would attract customers to off-peak flight times.

The current fare setting system, and the profit maintenance and cross-subsidisation objectives which underlie it, are a rigidity in the market and hinder innovation in the industry. Since airlines charge equal fares for equal distance, the system effectively prevents innovations designed to penetrate new markets by offering different prices in different markets. Also, since an across the board fare cut would be matched by the competitor (if allowed in the first place), the existing regulations discourage any fare cutting.

It is to be expected that a regulatory framework which ignores the role of the profit motive will result in inefficiencies. The firm has little need to consider the effect of its actions on profitability since profits effectively are underwritten by the regulations. The previous section noted that technical inefficiency was likely since the regulations automatically covered all costs, including normal profit. Similarly, on the revenue side, the firm has less incentive to penetrate new markets, since the operators are discouraged from undertaking market activities which involve a greater degree of risk than that implicitly contained in the allowed rate of return; though, as outlined above, part of these rents might be captured through technical inefficiency. In addition the ability of firms to develop new markets is hindered by the rigid pricing system. The net result is a reduced industry capability of adjusting rapidly to changed market conditions.

2.4 Quality of Service

In addition to eliminating competitive price behaviour, the regulatory framework also has restricted the extent of non-price forms of competition. Thus non-price means of competition, such as ground services, in-flight food and drinks, interior colour schemes and advertising, have not resulted in any significant differences in the nature of air services provided by the two operators.

12Douglas and Miller (1974a, p.97) claim that in the U.S. carriers adjust service quality in such a manner as to realise normal returns in each market. This might be achieved by higher load factors. However, this is not the case in Australia, where unprofitable routes tend to have low load factors (and hence higher quality service). Gannon (1979, p.147) also noted an apparent cross-subsidy from the long distance routes to the short distance routes.

13The standby fares also provide consumers with some possibility of trading off price and quality (i.e., the certainty of obtaining a seat). The following section discusses various aspects of service quality.

14Hartley (1974) notes that the separate restaurants of TAA and AAA in Tullamarine Airport have the same numbers of tables and chairs.
large extent the consumer is offered an all-or-none choice by the operators in which he is forced to purchase the total package provided by the airlines and, of course, to pay the costs of all extras involved. There is little opportunity to trade off price and quality in order to purchase that combination most in keeping with his tastes and budget.

The general service characteristics mentioned above are only one dimension of the quality of air services; the other major dimension is flight frequency. Douglas and Miller (1974a), in their analysis of U.S. domestic air transport, emphasise the role played by frequency competition. Given a fixed or controlled fare, airlines actively compete with each other by increasing the frequency of flights, and hence the quality of service, until rents disappear and normal profit is earned. Quality of service is an endogenous variable which is determined by competition between airlines after the regulated price parameter is fixed. Thus for the given price, consumers enjoy the highest possible standard of service.

In Australia, competition through flight frequency (often considered to be "wasteful competition") is eliminated through the capacity determination procedures established by regulation. Under these procedures, demand for air services is estimated and then, on the basis of a chosen target load factor, the required total capacity is determined. Each airline is allowed to operate 50 percent of determined capacity on competitive routes. This procedure in effect determines the quality of service to be offered to the consumer. Then, given the normal profit regulatory framework, price is determined.

The procedures adopted in capacity determination have been criticised severely by Forsyth and Hocking (1978, p.15) on two major grounds. First, they encourage a high degree of co-operation between TAA and AAA. As noted above, the Rationalization provisions of the Civil Aviation Agreement Act encourage collusion between the airlines. The importance of collusion in shaping the performance of the industry must be emphasised. Hocking (1972, p.10) neatly summarises the situation: "Thus by a process of formal and informal discussion and mutual exchange of information, including operational data, the airlines have the opportunity to collude in all decisions, an opportunity specifically sanctioned by Act of Parliament ... ".

In view of the stated dislike of monopoly when the Two Airline Policy was formulated, it seems ironic that the Government has created an effective monopoly with its regulations. Douglas and Miller (1974a, p.47) identify an extreme case in which market equilibrium leads to a similar monopoly outcome. Assume that the market is shared equally and both airlines have the same capacity. Then, if each perceives that any changes in its capacity will be matched by its rival, each will offer exactly half the capacity offered by a monopolist. This is exactly the situation created by the regulatory framework. Thus whether one emphasises the collusion theory or more independent decision making, a monopoly outcome is the result.

The second criticism of capacity determination procedures is that they provide...
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Scope for strategic behaviour when the airlines do not agree on capacity. An operator might gain from spillover of his competitor's potential customers if capacity is restricted. Thus the operator might seek to limit capacity below that desired by his competitor. In this manner, consumer preferences can be overlooked as the operators manoeuvre to prevent their competitor gaining any market advantage.

Capacity determination severely restricts competition in the industry. Even if the two airlines were willing to compete with each other, this is frustrated by capacity determination which limits the level of available aircraft capacity that each airline can operate. In effect, since each operator has 50 percent of industry capacity, neither is in a position to gain significant additional traffic through competitive efforts. While stabilising the industry by ensuring the viability of both operators, this imposes social costs on the community through the lack of innovation in the services provided. Firms have less ability to seek new markets and to cater for changing consumer tastes and preferences. The main forces for change in the industry are political pressures, but this process is slow in adjusting to revealed demand preferences; and only the most conservative response would be expected.

One of the major effects of the regulatory framework is the virtual absence of any choice of price/quality on the part of the consumer. A well developed market would be expected to provide a range of such choices catering for the differing needs, tastes and budgets of consumers. The absence of such choice is a social cost imposed on the community by the regulation of the industry.\(^{19}\)

An aspect of quality which has a long history of complaint by both politicians and the public has been the parallel scheduling offered by the two operators.\(^{20}\) Hocking (1972), using the familiar Hotelling ideas on the spatial location of firms, describes this as the result of timetable competition between the airlines. It seems likely that this outcome would result if TAA and AAA were competing in this respect. However, given that the airlines are colluding actively in most other aspects of air services, it is not very plausible that independent, competitive scheduling has resulted in a Hotelling-type market equilibrium. An alternative explanation would recognise that timetable collusion cannot work perfectly. Since there is no mechanism for pooling and sharing revenue and since the time pattern of demand is not known with certainty, de-paralleling of schedules would increase the risk of one operator gaining a market advantage over the other. The historical maintenance of parallel schedules indicates that the airlines are not prepared to bear this risk. Thus, scheduling in parallel is the optimal collusive arrangement between the airlines with respect to timetables.

Whatever the explanation, the system imposes considerable costs on the public. It would seem that a monopolist offering the same total number of flights on a route would serve the public better by having a greater spread of flight times. In addition, there are the extra demands placed on airport facilities by having parallel flights. However, the explanation of parallel scheduling does have efficiency implications. Competition through timetables provides a mechanism by which the market can respond to changes in the timetable aspect of demand. The equilibrium parallel schedule will be that parallel schedule most accurately

\(^{19}\)The Domestic Air Transport Policy Review Committee agreed with the proposition that significant efficiency gains would be achieved if the airlines offered a wider range of price/quality options [Department of Transport (1979, p. 5)].

\(^{20}\)The fact that parallel scheduling has continued despite this protest provides interesting evidence on the public versus private theory of regulation debate. See Posner (1971, 1974).
serving consumer timetable preferences. These forces to satisfy consumer interests are reduced if the timetable is the result of collusion. Thus one would expect the industry to be slower to adjust to changes in timetable preferences.

2.5 Entry Control

The survival of the Two Airline Policy is achieved by strict Government control of entry into the industry. Ultimately the ability to prevent another airline competing with TAA and AAA comes from the Customs (Prohibited Imports) Regulations which give the Department of Transport the power to issue or withhold a permit to import aircraft.21 As long as this power is used to insulate TAA and AAA from competitive pressures, it is unlikely that industry performance will improve noticeably.

At present the consumer has little choice; there is almost no price and service quality competition, and there is no mechanism for consumers to express their preferences. If entry restrictions were removed the circumstances would change considerably. The airlines would be under pressure to offer a range of services desired by travellers at prices more accurately reflecting their economic cost.

Much has been made in the past about the economies of scale that exist in the airline industry and the view that these might not be enjoyed if entry restrictions were relaxed. It is debatable if such economies do in fact exist in today's market size. Douglas and Miller (1974a) claim that in the U.S. the cost of providing additional services of a given quality is constant. The estimated cost function of Mackay (1979) implies that unit costs might fall by about 4 percent if AAA and TAA were merged. However, even if the industry is a natural monopoly, the potential threat of competition would be effective in ensuring that the single firm did not pursue monopoly behaviour.22

Recently, deregulation of the US air industry [Bailey (1978)] has promoted greater entry as well as pricing flexibility and increased managerial discretion. The US experience illustrates the importance of potential competition as an effective market policing device, in addition to the benefits of increased numbers of carriers. Bailey claims that US deregulation has resulted in Pareto improvements: travellers have benefitted from a wider choice of price/quality options, while the industry has shown improved financial results. The latter is to be expected since, among other things, a more competitive environment would require airlines to accept greater commercial risk (in terms of service and price innovations) than they do currently.

3. WELFARE COST OF REGULATION

In this section a simple economic model of the airline industry's behaviour is used to provide an estimate of the order of magnitude of the welfare loss due to regulation. This cost is measured using consumer surplus concepts.

21It is ironic that AAA owes its current position in the domestic airline industry to the failure of the Government to use these powers in the early years of the Two Airline Policy. During these years AAA was permitted to import modern aircraft and thus was able to gain a foothold in the market by providing a different price/quality option to the services then provided by the major operators. This competition helped to bring about the demise of Australian National Airways, the original private airline in the Two Airline Policy, thus opening the way for AAA's participation.

22This argument regarding the effect of potential market entry is presented in Demsetz (1968)
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It is well known that in a duopoly where both firms face the same cost conditions and have guaranteed market shares, the firms maximise their individual profits by maximising industry profits; and the price/output result is the same as the monopoly outcome. This industry structure closely approximates conditions under the Two Airline Policy.

The workings of the market are represented in Figure 1. The exposition is simplified if constant costs are assumed (perhaps not unrealistically). Thus the monopolist, with costs AC1 and facing demand conditions given by D and MR, maximises profits by producing and selling Qm at price Pm and earns supernormal profits represented by \( Pm \cdot NBm \). The resulting welfare loss is given by area \( Pm \cdot GBPm \); under the competitive rent-seeking hypothesis [Posner (1975)], monopoly rents or profits are real social costs, not merely transfers.

However, as noted above, the situation is different in the regulatory environment since visibility of supernormal profits must be avoided. This requires an average cost pricing rule. The only way in which the monopolist can approach his desired position is to raise the cost curve. This results from technical inefficiency. For example, there might be over-employment of hostesses, sweetheart deals with unions, or extravagant managerial offices. In this manner monopoly rents are distributed to the factors employed by the airlines. In Figure 1 costs rise\(^23\) to AC2 and the outcome under regulation is represented by the combination \( P_r \) and \( Q_r \). A measure of the welfare loss (assuming captured rents are social costs) is given by the area \( P_r \cdot GBP_r \).

Posner (1975) derives a simple working formula for calculating the welfare loss assuming a linear demand curve

\[
L_r^1 = R_r(1 - k)[1 + e(1 - k)/2] \quad (1)
\]

where

\[
R_r = P_r \cdot Q_r
\]

\[
k = \frac{P_c}{P_r}
\]

\[
e = \text{absolute value of price elasticity of demand at } (P_r, Q_r)
\]

The elasticity of air passenger demand has been estimated at -1.9 [Bureau of Transport Economics (1978, p.58)]. As noted above, Mackay (1979) estimated that, in the absence of regulation, unit costs might fall by as much as 35 percent. Thus \( k = 0.65 \). From footnote 8, \( R_r = $500m \).

Using these data the welfare loss amounts to approximately 47 percent of gross industry revenue, or about $233m in 1976-77.\(^24\) This figure contains a deadweight consumer surplus loss of $58m (12 percent of revenue) and captured rents of $175m (35 percent of revenue).

Swan (1977) uses a formula for the corresponding welfare loss when the price elasticity is equal at the points on the demand curve corresponding to both the

\(^23\) There might be constraints on the extent to which costs can be raised. The degree to which \( P_r \) approaches \( P_m \) is then an empirical question.

\(^24\) This figure can be interpreted also as the compensating variation (the amount consumers are willing to pay to achieve a policy change favourable to them) since the ordinary demand and the compensated demand curves are insignificantly different from each other.
regulated and competitive prices. This is given by

\[ L^2 = \frac{P_r (1 - k^{1+e})}{1 + e} \]

(2)

where \( e \) is now the actual (not absolute) value of the price elasticity.

In this case the estimate of welfare loss is 53 percent of gross revenue, or $265m in 1976-77. The deadweight consumer surplus loss is $90m (18 percent of revenue). The above estimates of welfare loss reflect only the industry's technical inefficiency. In a free market situation the price might fall below \( P_c \), since the market then might provide a lower quality service than that implied in the above analysis. A free market price below \( P_c \) implies an additional welfare loss due to the regulatory environment. Of course, this extra loss must be offset by the value to the consumers of the current higher quality of service. If the estimate of the corresponding loss offset in the international air travel world [Findlay (1978)] is any indication, then the loss offset in the domestic industry would be minimal.

4. CONCLUSION

This paper presents an economic assessment of Australia's domestic air transport industry. To this end, many points of detail have been avoided. For example, there has been little or no attention given to markets on a geographical basis, to services other than those on competitive routes, to freight versus passenger markets, to types of aircraft used and to other technical matters. This avoidance has been deliberate; the analysis is simplified, and the underlying forces influencing the industry and the basic economic issues at stake are clarified.

The dominant factor influencing the industry has been government regulation. This regulation almost exclusively has been directed towards the financial viability of the two operators, with little attention given to consumer interests. The regulatory framework has remained largely unchanged over the years. There are doubts as to whether the Two Airline Policy was appropriate when first introduced; the appropriateness of this policy is even more doubtful today.

The regulatory framework has resulted in an industry characterised by technical, as well as allocative, inefficiency; an industry in which there is insufficient incentive to adequately cater for consumer interests. Consumers suffer from absence of price competition and a lack of choice of price/quality options. Producers suffer from the stifling of entrepreneurial skills.

Regulation of the domestic air industry imposes a welfare cost on the community, estimated to be in the order of 50 percent of the industry's gross revenue, or $250m in 1976-77.

The cornerpost of the Two Airline Policy is the Government's use of import controls to restrict entry into the industry. Removal of entry restrictions would be minimal.

\[ \text{Following on from footnote 23, it is of interest to calculate the pure monopoly price. If } -1.9 \text{ is used as an estimate of the price elasticity at } (P_m, Q_m), \text{ then the profit maximising monopolist with costs } MC_1 \text{ will charge price } P_m = 2.11P_c. \]

We already have \( P_r = 1.54P_c \). Thus the data indicate that technical inefficiency has enabled the firms to absorb at least 49 percent of the potential monopoly rents (the technical inefficiency given by area \( [(P_r - P_c)(Q_r - Q_m)] \) is not measurable, given the data presented in this paper).
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appears to be a prerequisite for an increase in economic efficiency in the airline industry. In view of this, the recommendations of the recent Domestic Air Transport Policy Review offer little prospect of any significant increase in industry efficiency.

References


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PAPER 2:

"Optimal Pricing Policies for Air Transport Networks:
Some Comments on Economic Regulation and the
Australian Domestic Air Industry",

OPTIMAL PRICING POLICIES FOR AIR TRANSPORT NETWORKS: SOME COMMENTS ON ECONOMIC REGULATION AND THE AUSTRALIAN DOMESTIC AIR INDUSTRY

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Abstract—This paper discusses some issues raised in de Neufville and Mira (1974). The approach they use to justify government regulation of airline markets is criticised. In addition the paper presents an alternative account of the Australian system of air industry regulation; a system which utilises the controls recommended by de Neufville and Mira.

INTRODUCTION

In an article in this journal de Neufville and Mira (1974) investigate some economic aspects of the air transport industry. There they develop various theoretical models of airline markets and derive the corresponding necessary optimality conditions and resultant pricing strategies which would ensure the maximisation of social welfare. Their results conform with the usual marginal cost pricing requirements. Further, they conclude that "active government intervention is necessary to achieve social optimum". To achieve this social optimum the government "should frequently intervene by applying taxes or providing subsidies depending on the circumstances", while also "it appears necessary for the government to regulate capacity in addition to price". In addition to the theoretical analysis, the authors cite the Australian domestic air industry as evidence to support their regulatory recommendations.

This paper argues that the authors' conclusions in favour of government intervention into airline markets are not justified on the evidence presented. In addition, the paper examines the Australian situation in slightly greater depth to illustrate more clearly the effects of its air industry regulation.

A REVIEW OF THE DE NEUFVILLE AND MIRA MODELS

De Neufville and Mira (1974) are concerned with the economic efficiency of various theoretical airline market models. This involves the maximisation of net social welfare, \( S \), which equals the difference between the value of air transport, \( V \), and the cost of providing that transport, \( C \). The value of air services is taken to depend on the number of passengers flown, \( N \), and the number of flights, \( n \), which is a proxy for service quality. In general the more frequent the service the less the difference between preferred departure time and scheduled departure time, and hence the more valued the service. The cost of each flight is assumed to be \( c \).

In the first model considered the authors assume that there are no congestion costs. Thus \( C(p) \) and \( c(n) \) are equal to zero. Then the objective is to maximise

\[
S = V(N,n) - nc
\]

subject to an aircraft capacity constraint

\[
N/n \leq A
\]

where \( A \) is the capacity of the aircraft.

Maximising with respect to \( N \) and \( n \) gives the necessary optimality condition

\[
V_n + (N/n)V_N = \partial
\]

where \( V_n \) and \( V_N \) are the partial derivatives of \( V \) with respect to \( n \) and \( N \) respectively. Since \( V_N \) is the demand function it is also equivalent to the equilibrium market price, \( p \). Thus

\[
p = V_N.
\]

Under conditions of perfect competition firms will just cover costs, so

\[
\partial = (N/n)p_c.
\]

Thus to satisfy the optimality condition (3) a subsidy per flight, \( H \), must be paid to the airline where

\[
H = \partial - (N/n)p_c = V_N.
\]

Without this subsidy fares under perfect competition, \( p_c \), are higher than the level of optimal fares, \( p_o \). Hence there would be fewer passengers and flights than socially desirable.
The authors also consider the outcome when a regulatory authority attempts to set prices at a level greater than \( p_c \). They show that the airlines respond by increasing the number of flights and once more earning only a normal rate of return. Since in this case

\[
\dot{c} = (N/N_p)p_c
\]

(7)

regulation of prices implies a load factor of

\[
\rho = \frac{(N/N_p)}{A} = \dot{c} p_c A
\]

(8)

which for \( \rho > p_c \) is less than that occurring under perfect competition. A combination of a tax on airlines and a subsidy to the passengers can be used to move from this regulated outcome to the social optimum.

In their second model the authors consider the existence of airside congestion but maintain the assumption of zero landside costs. If both the airside delay and the constant production cost are imputed to the function \( c(n) \), then optimality in this case requires a tax per flight

\[
T = n c_n - V_n \tag{9}
\]

since a perfectly competitive market will have prices too low, \( p < p_c \), and too many flights provided.\(^2\)

Again a regulatory system that sets only prices merely results in a decrease of the passenger load factor such that

\[
\rho = c(n)/p_c A \tag{10}
\]

The authors show that a tax on aircraft flights will be capable of achieving optimality when this regulatory outcome is the starting point.\(^3\)

Landside congestion costs are introduced into the third model considered by de Neufville and Mira. These costs are a function of the load factor, and hence are influenced by the number of passengers and flights. However, airside costs are again assumed to be zero.

The objective is to maximise

\[
S = V(N, n) - n \dot{c} - NC(N, n) \tag{11}
\]

subject to the capacity constraint (2). The authors also specify an explicit form of the congestion costs function \( C(N, n) \) where

\[
C(\rho) = K/(1 - \rho) \tag{12}
\]

It is then possible to derive optimal load factor and price.

Thus\(^6\)

\[
\rho_0 = \frac{1}{1 + \sqrt{KA(\dot{c} - V_n)}} \tag{13}
\]

and

\[
\rho_0 = K/(1 - \rho)^2 \tag{14}
\]

As there can be no presumption that perfect competition will lead to an optimal outcome, the authors recommend that the regulatory process should fix both fares and frequency competition.

**SOME ASPECTS OF ECONOMIC REGULATION**

There are two necessary conditions for an economic efficiency justification of market intervention. The first is to identify a case of market failure, where the market outcome differs from the socially optimal outcome, and hence the existence of potential benefits from resource reallocation. The second requirement is to conduct a cost/benefit analysis of the regulatory action under consideration. Only if the benefits of market interventions exceed the costs of that action will there be a net gain to society. It is the frequent failure to satisfy this second requirement that can lead to a premature (at best), and often unjustified, call for government intervention.

In their paper de Neufville and Mira pursue the following strategy. They develop some theoretical models of airline markets, show that the existence of congestion externalities causes market failure, note the resultant potential for social gain, and conclude by recommending the need for government regulation of the air industry. However the last step in their argument is a *non sequitur*. Demsetz (1969) labels this strategy the "Nirvana" approach to policy making. While the imperfect nature of the market mechanism may be demonstrated, little attempt is made to assess the likely regulatory outcome which may be even worse than the market result.

In particular the costs of regulation have been disregarded: the "free lunch" fallacy. The implicit assumption contained in their analysis is that the market failure can be costlessly overcome through government intervention. In addition to the obvious costs of the required bureaucracy, the new regulatory environment may significantly alter the incentives facing individuals in the industry; and their rational economic response to these changes may greatly increase the costs of regulation (this point is illustrated in the following section). When the costs of regulation are realised to exist, it becomes crucial to measure the extent of market failure and hence
the potential welfare gains. Therefore it is necessary to empirically estimate the externalities involved: the marginal valuation of an extra flight \( V(\lambda) \), the airside congestion costs of an extra flight \( c_s \), and the marginal costs of groundside delays to the passengers \( c_e \) and \( C_r \).

In consideration of government intervention a comparative institution approach is preferable to the "Nirvana" approach. This requires an assessment of which real world arrangement (market or regulation, and both imperfect) is better suited to the particular economic problem at hand.

In addition, the authors' conclusions are based on the assumption that "the planners work for the public" and that "their goal is to maximise social welfare." This contrasts with the more recent private interest theory of regulation (Posner, 1974). This latter theory explains regulation as the outcome of bargaining via the political process among self-interest groups of varying lobbying strength.

An implication of this private interest theory is that, even if a public interest argument for government intervention does exist, one should not necessarily expect the observed regulatory outcome to actually be in the public interest.

REGULATION OF AUSTRALIA'S DOMESTIC CIVIL AVIATION

Since the early 1950s Australia's domestic air industry has been heavily regulated, the dominant feature of which is the so-called Two Airline Policy. Under this policy scheduled services on the major air routes are reserved for two operators. These operators are Trans-Australia Airlines (TAA), which is owned by the Commonwealth Government and operated as a statutory authority, and the privately owned Ansett Airlines of Australia (AAA). About 87% of the total scheduled tonne-kilometres flown in Australia in 1975/76 were on these major trunk routes.

The Two Airline Policy is maintained by strict Government control of entry into the industry. The Government is able to prevent another airline competing with TAA and AAA through its Customs (Prohibited Imports) Regulations, which give the Australian Department of Transport the power to refuse permission to import aircraft. Due to constitutional difficulties, the regulatory details are specified in a series of agreements between the operators and the Government. The aims of the Policy were first expressed in the Civil Aviation Agreement Act 1952:

"to avoid unnecessary overlapping of services and wasteful competition, to provide the most effective and economical services with due regard to the interests of the public and to bring earnings into a proper relation to overall costs".

A Rationalization Committee was established in 1957. It consists of a member from each airline, plus an independent Co-ordinator. When the airlines cannot agree on matters such as routes, fares and timetables the issue can be taken to this Committee for a decision. The regulatory system thus gives the airlines both opportunity and encouragement to collude. This system has effectively restricted the extent of both price and non-price competition, with the result that there are no significant differences in the nature of air services provided by the two operators.

Through the Airlines Equipment Act 1958 the Government is able to control the size and composition of the two fleets. The greatest impact of this Act on the industry is via its quantitative capacity restrictions. Under the capacity determination procedures demand for air travel is estimated, and then, on the basis of a chosen load factor (65%), the required total capacity is determined. Each airline is then allowed to operate 50% of this determined capacity.

Apart from the collusive implications and opportunities for strategic behaviour (e.g. an operator may gain spillover of his competitor's potential customers if capacity is restricted) that may occur under capacity determination, these procedures inhibit competition in the industry. The requirement that each airline operates 50% of capacity places a limit on the attainable market share of major route traffic, so that neither is in a position to gain significant additional traffic through competitive efforts.

However, probably the most serious impact of this regulatory system which controls the load factor and sets prices is its effect on costs. After determining the load factor, and hence the capacity offered, prices are set to cover costs. The approved fare formula, which is linear in distance and applied to all routes using the same type of aircraft, is based on the average cost (including an appropriate profit margin) of servicing the entire route network at the given load factor. Under this average cost pricing rule the operators have reduced incentive to control costs since profits are effectively underwritten by the regulatory framework. Mackay (1979) examined the technical efficiency of the airlines and found that average costs were as much as 35% greater than they might be in an unregulated environment. Based on this empirical finding the resultant welfare loss to society has been estimated at around 30% of industry revenue, or $250m in 1976/77 (Kirby, 1979). Clearly the airline operators' responses to the new incentives created by the regulatory environment have severely limited any social wel-
fare aims of regulation, and have resulted in prices substantially higher than those that might be envisaged by de Neufville and Mira.

In their theoretical models de Neufville and Mira thoroughly analyse the regulatory outcome when the authorities control only prices, and note that the airlines’ response is to dissipate profits through quality competition, with a resultant unfavourable impact on social welfare. However, they fail to recognise the significant implications of a rational response to the newly created incentives inherent in a scheme of regulating both quality and price.

In Australia domestic aviation is regulated in the manner suggested by de Neufville and Mira: both load factors and prices are controlled by government intervention. However, it is unlikely that this intervention has improved social welfare. The nation is not served by “two fiercely competitive airlines” as they suggest. There is no price competition, the airlines offer identical capacity, identical aircraft and identical standards of general service characteristics; and each of these is determined only after consultation between the two airlines. The public has not benefited from low prices since the changed incentive structure has encouraged technical inefficiency. Rigidities in pricing policy and capacity have limited the ability of the industry to seek new markets and respond to changing consumer preferences. The above seems a high price to pay in order to guarantee “reasonable profits” and financial viability of the two airline operators involved.

CONCLUSION

While de Neufville and Mira have extended our knowledge of the economic theory of airline markets, in particular the efficiency characteristics of these markets, their recommendations for regulatory actions are premature. To assess the desirability of such actions empirical research is first needed on the extent of the market failure involved and the costs of regulation, so that a valid comparison is possible between market and regulatory outcomes. The authors’ brief reference to the Australian situation should not be regarded as convincing evidence in support of their regulatory conclusions.

Acknowledgement—My thanks to Christopher Findlay for drawing my attention to the article under discussion.

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DOMESTIC AIRLINE REGULATION

The Australian Debate
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Preface

Government regulation of an increasing level of economic activity has become a feature of modern life. The traditional justification for economic regulation is that intervention is needed to correct so-called 'market failure' and is thus intended to serve the public interest. There is, though, some degree of argument as to the extent of market failure. This argument has become more current given the evidence of the failure of government to deal in any satisfactory way with some of the problems it has set out to cure through intervention. Perhaps markets do fail, but it may be that the costs of 'government failure' are far greater.

Some argue that the failure of the regulatory process to achieve its ends in correcting the performance of the market is sound enough reason on grounds of efficiency for abandoning regulation altogether. Others argue, with increasing force that any interference with the voluntary market process inevitably leads to unwanted side-effects.

There are aspects to government regulation which can never be fully appreciated - often because the effects are unseen. These include the burden of costs of compliance with the regulations upon individuals and companies (and their customers).

More fundamentally, regulation leads to a serious disruption of the market process itself, resulting in a myriad of foregone innovations and lost opportunities due to the stifling nature of many regulations. This disruption of the market process has another aspect. An unregulated market generates a discovery process under competition which regulation hinders. The competitive market process is a way of discovering who can do a job best in given circumstances. The person (or company) who does best is not the same in all circumstances, but will change as conditions change. Regulation acts as if to decide the winner in the competition stakes in advance and to prevent those who may wish to join the race from competing on anything like equal terms. The costs to efficiency and consumer welfare may then be very high.

In recent times, the pendulum that was swinging towards greater interference in the economy has slowed.
Serious attempts have been made to determine if there are other reasons why regulation exists. If regulation is instituted in the name of the 'public interest' and it can be shown that the public interest is not being served, then perhaps other explanations are called for. If in fact regulation does operate entirely to correct market failure (bearing in mind that there are strong views about whether regulation could ever do this satisfactorily), then there may be little argument about the need for regulation. However, on observing just some incidences of economic regulation, a number of points which go counter to the market failure/public interest rationale, seem to arise.

For instance, regulation frequently acts not to improve the efficiency of markets, but to affect a redistribution of income towards those groups subject to regulation, and away from, and at the expense of, the larger body of consumers. As well, regulators can fall captive to the groups which they are charged with regulating and so end up serving a small and privileged group of the regulated at the expense of new entrants to the industry.

There are further undesirable features of regulation - too many to be dealt with in a short preface. The Centre for Independent Studies has long been concerned with the effects of government economic regulation, and indeed of regulation of all individual activity. In establishing this new series of Research Studies in Government Regulation, the Centre will employ some of Australia's ablest social scientists to undertake specific studies. By examining regulation in the context of particular cases, general principles with which to deal with broader issues of regulation will be established.

This first study by Michael G. Kirby, an economist from the Australian National University, is a substantial piece of research into the regulation of an industry which exhibits some of the more notorious side-effects of regulation.

To Australians, the existence of the Two-Airline Policy, and regulation of the airways in general, have come to signify the problems of regulation of industry in a highly visible way. The presence of a government-owned airline has not helped matters. The continual public squabbling over some aspect or other of government policy as it affects the domestic airline industry has not only diverted the government away from its more legitimate functions, but has made sure that the machinations of airline regulation are continually dragged into the daily press. Is the fact that an airline serves sandwiches or chicken really worthy of front-page headlines? In short, the whole issue has become one of
unnecessary prominence, reflecting the inordinate social cost of making such decisions in a political process.

The debate over the regulation of Australia’s airlines has been loaded with contradiction, political expediency and unsupportable economic argument. Mr Kirby has helped to clarify the issue with his thorough sifting of a broad cross-section of opinion. He carefully analyses the many propositions put forward in the defence of regulation and skilfully shows how so often its champions fail to survive even the most basic economic test. On surveying this study it is hoped that the reader may gain some insights into the complex issue of economic regulation in the general sense, as well as a better understanding of the development of what has become in a short space of time a policy which seems to bestow no credit on those whose aim is to serve the ‘public interest’.

In the end, the reasons for instituting regulation may be at odds with the ‘public interest’ rhetoric with which it is clothed. Rigorous empirical analysis allied with the insights of theory may bring more to bear on the issue than is now obvious. Out of it all, and this is the purpose for the establishment of this series of studies on regulation, the viability of a competitive market may be maintained and the opportunities of service to the consumer enhanced.

Adam Smith long ago saw the virtues of competition. He delivered many warnings, but perhaps none was more perceptive than:

People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public; or in some contrivance to raise prices. It is impossible indeed to prevent such meetings, by any law which either could be executed, or would be consistent with liberty or justice. But though the law cannot hinder people of the same trade from sometimes assembling together, it ought to do nothing to facilitate such assemblies, much less to render them necessary.

The Centre for Independent Studies is pleased to publish this book, which it feels makes a significant contribution to the debate on airline policy and regulation generally. However, the conclusions of its author remain his alone and cannot be considered to be those of the Centre’s Directors, Trustees, Advisers or officers.

Greg Lindsay
Introduction

... a world of half-measures, complicated compromises, and political 'realities' created by fervent repetition of untruths ... [Levine (1975, p. 703)] *

The debate on the regulation and possible deregulation of the Australian civil aviation industry consists of many complex, interrelated and sometimes conflicting arguments, which are often presented in the context of subjective value judgements. This study critically and comprehensively reviews the many arguments presented throughout the development of Australian aviation policies, and is intended to serve as a guide to interested participants in, and observers of, this airline regulation debate. While the above quotation refers explicitly to the U.S. experience, it will soon become apparent that it is also applicable to Australia.

The study is directed mainly towards the regulation of the Australia's domestic air transport industry.¹ There is also a tendency to concentrate on the provision of trunk route services, although the analysis is not limited in its application to these particular services. This concentration reflects the overwhelming importance of the Two-Airline Policy for domestic civil aviation. However, while there is a definite domestic setting, much of the discussion also has direct

¹ Due to the research emphasis of this study and its extensive use of quotations and other supporting references, a combination of the Harvard system (author, date) and standard footnoting has been used. For those unfamiliar with the Harvard system, an example such as: Levine (1975, p. 703) refers to a 1975 study of Levine's as listed in the references at the end of the book.

The principal features of this regulatory system are detailed in Appendix 1.
relevance to the regulation of Australia's international aviation; though, of course, the latter has many unique features which are not considered here.

This book is intended to be an examination of a genuine and continuing debate, not merely a list of straw-man arguments. To achieve this purpose and to present with clarity the many different points of view, the study makes extensive reference to the many previous contributors to discussions of civil aviation policy. In addition, the empirical experience of the airline industry, mainly in Australia and the U.S., is used wherever possible as evidence when assessing these various points of view.

The study also seeks to analyse the Australian airline regulation debate within a sound economic framework. The discipline of economics offers criteria for the choice of industry policy likely to increase the community's welfare. In particular, it provides two necessary conditions for an economic efficiency justification of government intervention with market forces. Firstly, one must demonstrate the existence of market failure where the market outcome differs from the socially optimal one, and hence where there exists the potential to increase efficiency through government regulatory actions. Secondly, the benefits from any proposed market correction policy must exceed its costs. Hence a thorough analysis of the airline regulation issue must involve a consideration of the likely extent of both market failure and regulatory failure. A constantly occurring theme throughout such an analysis is the effect on the economic performance of an industry of the incentives facing its participants, i.e. firms, consumers and regulators.

Chapters 1 to 5 scrutinise the various arguments regarding alleged market failure in the provision of airline services. Chapters 1 and 2 examine the industry structure and patterns of behaviour which are likely if open market competition among airlines were permitted. These chapters consider the likelihood that airline competition would be destructive and/or wasteful, and the alternative possibility that the industry would tend towards monopoly and a lack of competitive behaviour. One of the special features of the Australian air transport industry is the existence of a government-owned firm. Its rationale and impact are discussed in Chapter 3. The important question of air safety and its relevance to the economic regulation of airlines are considered in Chapter 4, while Chapter 5 examines some social objectives which are frequently mentioned in the civil aviation context.
The following two chapters examine some issues relating to government failure in Australian air transport. The debate on the Two-Airline Policy is surveyed in Chapter 6. This chapter discusses the need for policy reform and broadly considers some of the available regulatory options. Chapter 7 reminds the reader of some of the inherent tendencies of the regulatory and competitive processes and suggests that a more useful explanation of current aviation policies may be found in the private interest theory of regulation rather than in the public interest theory which underlies a concern with market failure.

The study's Conclusion briefly summarises the implications of this analysis of the airline regulation debate for policy reform and speculates on its likelihood.
Competition Among Airlines: Too Much?

I. DESTRUCTIVE COMPETITION

Chaos and instability

The claim has often been made that permitting open market competition would lead the airline industry into a permanent state of chaos and instability. Thus:

"Competition can exist to such a degree as to destroy all the several airlines,..."  

The poor financial returns earned by some airlines during the post-war decade were frequently attributed to the effects of competition. Certainly Government policy of the time was dominated by a fear that a competitive airline industry would be inherently unstable. Senator Paltridge (Minister for Civil Aviation, 1956 - 1964) remarks:

"It is not very rewarding in these circumstances to find a financial crisis developing in the industry every few years... it is essential that we get a stable pattern for future development which holds some prospect of the industry finally emerging as a self-sufficient arm of our transport services."  

The Government's response to achieve stability consisted of tighter restrictions on competitive forces in the industry. Import controls were used to prevent the entry of other operators, rationalisation procedures for airline services were strengthened, and measures to control capacity were introduced. A further example of the anti-competitive nature of the Government's policy is provided by Brogden


3 Hansard, Senate (hereafter S), 3 September 1957, p. 82.
(1968, p. 151) who reports that under the Cross Charter Agreement 1960 the airlines agreed not to introduce or propose any reduced fare services. The Two-Airline Policy (hereafter TAP) allegedly grew out of post-war chaos,\(^4\) and, as a result of this policy,

\[\ldots\] the industry has been spared for many years the periodic economic crises that bedevilled it for so much of its history. [Ansett (1976, p. 54)]

The argument that competition must be restricted in order to prevent a collapse of the airline industry is still an important influence on regulatory policy. Robinson asserts:

\[\ldots\] whilst there is a competitive situation in certain respects obviously there must be basic things that have some common ground or the whole industry would be in chaos...\(^5\)

Similarly, Hocking (1979a, p. 72) warns that if the possibility of greater price differentiation is allowed in the industry:

Some degree of co-operation between airlines will probably be essential, as widely differing prices between airlines, even if only temporary, could be destabilising.

While most authors agree that the TAP has maintained stability in the airline industry [e.g. Forsyth (1979, p. 66)], it is not clear that the industry would have been subject to destructive competition and instability in the absence of such a policy. It is also not clear that the competition-and-chaos scenario is the most accurate interpretation of events in the post-war period.

**Destructive pricing and airlines**

Kahn (1971, p. 173) identifies two prerequisites for des-

\[^4\] Ansett (1972, p. 39). Sir Reginald Ansett was founder, Chairman and Managing Director of Ansett Transport Industries (ATI).

\[^5\] Robinson, Commonwealth of Australia, *House of Representatives, Select Committee on Tourism* (hereafter *Hansard*, SCT), 8 February 1977, p. 799. Robinson was subsequently Minister for Finance.
Destructive pricing to occur in an industry. Firstly, fixed costs must be a large proportion of total costs; and secondly, the industry must be characterised by sustained and recurrent periods of excess capacity. When these two conditions are satisfied the firm is operating on the downward-sloping portion of its short run average cost curve and its scale of operations is too large for its level of demand. Since marginal costs are less than average costs in such circumstances, competition tends to depress prices towards the former and firms incur losses. When this argument is applied to the aviation industry we have the 'sacred truth' referred to by Levine (1965, p. 1423): without restrictions on competition, airlines would indulge in a frenzy of below-cost selling which would ultimately ruin them all.

Does the airline industry possess these prerequisites for destructive pricing? Supporters of regulation argue that the industry is characterised by a substantial degree of fixed costs. However, there is a strong consensus among economists that the ratio of fixed to variable costs is low for airline operations. Attention should also be directed towards the second necessary condition for destructive pricing which requires that the firm is unable to readily adjust its scale of operations to its most efficient level. However, it appears that airlines are capable of adjusting their scale fairly rapidly:

... the airline industry is very flexible and will gear up swiftly to meet public demand when growth returns to the industry. [Ansett (1976, p. 53)]

Many fixed costs can be quickly altered since an airline's capital assets seem quite mobile. For example, aircraft can be bought and sold or leased without great difficulty and readily shifted from one market to another. Computer systems, and perhaps even maintenance and engineering facili-

6 E.g. Goodrich (1960, p. 229), Chippindall (1965) and Brenner (1975, p. 798). Sir Giles Chippindall was Chairman of Trans-Australia Airlines (TAA), 1959-1966.
7 E.g. Smith (1978, p. 58), Grenning and Coat (1979, p. 12) and Keplinger (1976, p. 195). The validity of this conclusion is likely to have been enhanced by the rapidly rising fuel prices of recent years.
8 The nature and mobility of the fixed cost assets of airline operators are also important considerations for barriers to entry into the industry [see Chapter 2].
ilities, can be transferred with relative ease to other firms for use in the same, or often a different, industry. These considerations of the nature of airline costs indicate that destructive pricing and chaos would be unlikely to result from open market competition in the air transport industry.

This assessment is supported by the U.S. experience with competitive airline markets. Lloyd-Jones (1975, p. 815) claims that when the Civil Aeronautics Act was introduced in 1938 the industry was in chaos with most carriers experiencing serious financial problems. However, according to Kepinger (1976, p. 194), this alleged chaos was 'more a fiction... than a reality.' The below-cost bidding for mail contracts which occurred at the time reflected a desire to maintain a route monopoly on passenger traffic, as well as the knowledge that any losses would be covered by government subsidy and that further protective legislation was likely to be forthcoming. Thus any cutthroat competition which then existed could be more accurately attributed to government regulation under the Mail Act, rather than an inherent tendency towards destructive pricing. An examination of the Californian intrastate airline industry, which was virtually free of economic regulation prior to 1966, also reveals that airline competition need not be ruinous or chaotic (see Levine (1965, p. 1430]). Forsyth and Hocking (1978, p. 22) summarise this experience by noting that free entry did not lead to instability, either in terms of the routes served by the different carriers or in terms of increased variability of profits.

It is important not to confuse the phenomenon of destructive competition with the normal competitive process. When excess capacity occurs (through, say, a decline in demand or the entry of a new firm into the industry) and a firm is operating on a scale greater than its most efficient level, short run losses and reduced investment in or exit from the industry represent the usual competitive adjustment process towards a new long run equilibrium position. This process encourages firms to operate at the appropriate scale and enables the most efficient firms to continue production. However, existing firms are likely to define instability in terms of the possibility of themselves suffering a declining market share or going out of business. Similarly, as Kahn (1971, p. 173) notes, all competition is potentially destructive to the equity of firms subjected to it since they may be replaced by more efficient operators. Consequently, it is

9 Levine (1965) and Miller (1975) also support this view.
typical for these firms to refer to any price competition in their industry as destructive, excessive or cutthroat.

Thus, while open competition among airlines may increase instability in the sense that the relative market fortunes of particular operators may vary over time, it does not necessarily follow that services to the consumer are unstable or disrupted. But is it possible for these competitive forces to have an adverse impact on consumer welfare?

Declining quality standards

One argument suggests that competitive forces will lead to a lower quality service since prices, schedules and other product characteristics would be widely fluctuating. Furthermore, in such circumstances consumers would be unable to evaluate this range of service qualities since they lack the necessary technical expertise. However, this 'bewildered consumer' outcome is unlikely. Firms have an incentive to minimise needless changes in prices and schedules since this strategy lessens transactions costs to the consumer and hence increases demand [see Miller (1975, p. 696)]. The competitive U.S. intrastate markets have provided no evidence of deteriorating quality standards through wildly fluctuating product characteristics in an open market setting. While some proliferation of different fares and services available might be expected immediately following the deregulation of airlines, this process is likely to be relatively short-lived; this has been the recent experience in the U.S. [see Kahn (1979, p. 11)]. A wider range of price/quality options which may be offered in the longer term in a competitive airline market would reflect closer satisfaction of consumer demands, and expert advisers (e.g. travel agents) could ease any difficulties posed by increased complications facing consumers. Finally, the argument at best indicates the possible need for policies designed to directly attack the supposed quality problem (e.g. certification of standards or fair advertising laws) rather than comprehensive market entry restrictions.

Collapse of airline investment

Competition is also alleged to have a harmful effect on the air transport industry through its impact on investment. Brenner (1975, p. 812) considers that it would be impossible to finance the large capital investments of airlines if free entry
were permitted. Lloyd-Jones (1975, p. 825) claims that this impact will also hinder technological progress in the industry. The resultant need for route security and stability as a prerequisite to finance airline investments has also been a popular argument in Australia. Senator Cotton (Minister for Civil Aviation, 1969-1972) argues this case, 10 while Ansett (1965, p. 13) notes:

Stability is essential in an industry spending millions on future equipment needs . . .

TAA holds a similar view:

The stable economic environment has provided a sound base for the large commitments necessary for fleet purchases. 11

However, the argument is misleading. While every firm would undoubtedly enjoy guaranteed profits, simple observation indicates that risk capital is forthcoming in many fields, including aviation, in the absence of such guarantees or security. Thus one would not expect investment in the airline industry to collapse in the presence of open competition. Furthermore, the claim that competition would result in destructive pricing and falling investment appears to be internally inconsistent. The losses from excess capacity which allegedly lead to a fall in investment have resulted from too much previous investment. This process cannot be sustained indefinitely. At best, the argument is a description of the period of adjustment to the optimal scale of operations; at worst, the argument is illogical. Finally, it is more probable that competition would encourage technological progress, since those firms using the current best-technology techniques would be the ones most likely to prosper.

Irrational behaviour

Many of the claims made in support of airline regulation and examined in this study are likely to be valid only if airline firms behaved in an irrational manner. While it may be sensible and efficient to operate existing capital assets at short run marginal costs when faced with competitive

10 Hansard, S, 29 August 1972, p. 476.
11 Hansard, SCT, 8 February 1977, p. 706.
pressures, it would be irrational to invest in such an industry knowing that prices would not fully cover total costs of operation. Although Rasenberger (1975, p. 857) claims:

... there is an allure to running an airline that seems to drive otherwise sensible people toward economic self-destruction...

... economists would tend to reject this notion of irrationality. It also appears that Australian airline operators have not been as quick to claim self-irrationality!

Several comments are relevant. Firstly, the economic theory of competitive markets does not predict that failed investments will not occur. Competition involves rewarding good managerial decisions and penalising bad. Thus one should not confuse mistakes with irrationality. It follows that since one must allow for mistakes, which need not imply irrationality, any analysis of the performance of the industry should be primarily concerned with average behaviour over time and not with the financial fortunes of particular airline companies.

However, more mistaken investments might be expected in the period immediately following the removal of restrictive industry regulation. This could be due to a relative lack of knowledge regarding demand and supply conditions fostered by conservative regulation limiting the industry's operations to particular segments of the market. Even existing operators may not be certain of these conditions, except for those segments of the market for which they currently cater. It is likely that this situation would be quickly stabilised by the natural learning process and related market adjustments. This point is illustrated by the experience of the U.S. airline industry following its recent deregulation. The U.S. policy liberalised market entry, gave increased freedom to reorganise airline networks and offered prospects for a rise in competitive behaviour. Several of the major operators, especially Braniff, reacted to this less constrained environment with overly ambitious expansion efforts. Subsequent losses have led to various merger negotiations, e.g. between Braniff and Eastern Air Lines.

Finally, the often noted low profitability and marginal nature of the airline industry may merely reflect the level of normal profits required by owners of airline assets.
Alternatively, low profits and perhaps a relatively high variability of returns may to a certain extent have been compensated for by a truncation of the range of possible rates of return, i.e. the virtual guarantee of protection from bankruptcy.

II. WASTEFUL COMPETITION

The problem of wasteful competition

Proponents of airline regulation pursue a slightly different direction when the concept of wasteful competition is introduced. It is often feared that a freely competitive airline market will be characterised by wasteful competition through increased service quality resulting in higher prices. Regulatory policies are thus supposed necessary to restrict this competition and to protect the consumer. However, it seems clear that fallacious reasoning underlies much of this fear.

One line of argument suggests that since we observe cost-increasing competition within the regulated environment, the situation would be even worse if the market were fully competitive. Hence more, not less, regulation is needed. However, this conclusion does not necessarily follow. It is the inability to compete with respect to prices that encourages firms to engage in non-price competition. Hence a viable alternative approach to reduce any observed wasteful competition is to remove price and entry restrictions. Kahn (1971, p. 209) summarises the economic principle involved:

... when limitations are placed on price competition, but market conditions are such as to make continued interfirm rivalry likely, the consequence will be accentuation of service competition... Specifically, they will be inclined to improve service in one way or another, until their marginal costs, inflated by the service improvements, are equated to price.

Thus wasteful quality competition can often be traced directly to price regulation. In fact, since there is a direct

\[ \text{For example, the 'free' drinks and meals which Ansett Airlines of Australia (AAA) initiated in the early months of 1980 are estimated to cost the operator at least $5m per annum [The Canberra Times, 7 May 1980].} \]
positive relationship between price and quality when rivalry among firms reduces profits to normal levels, the observation of 'excessive' non-price competition indicates that the regulated price is set 'too high'. There are three policy choices: further restrictions in an attempt to remove all possibility of competitive behaviour and to enable firms to enjoy supernormal profits at the current regulated price; set a lower regulated price, implying less quality competition; or remove price and entry restrictions and permit market forces to determine the price/quality outcome.

The choice among these approaches depends upon an assessment of whether the regulatory authority or the market mechanism is better able to achieve the price/quality option preferred by consumers. Many economists would favour the objective assessment of price and quality offered by a fair market test. If the market indicates that consumers prefer a higher price/higher quality combination than is presently provided, this can hardly be interpreted as wasteful competition. The likelihood of regulators being better able to provide maximum consumer satisfaction diminishes rapidly with the knowledge that the observed inefficiencies are due to current regulatory policies and with the recognition that the demand for air services is not homogeneous, yielding the possibility that many price/quality options may be in demand.

Some advocates for regulation claim that price competition is not feasible in airline markets. Brenner (1975, p. 803) erroneously suggests that competitive pricing behaviour implies different prices among airlines. In fact, the process leading to uniform prices, which he describes, is price competition. He also argues that a typical operator, when faced with a competitor offering a lower price/lower quality product, would match the price cut but maintain the higher quality and thus capture the entire market. However, in a competitive market this strategy involves short run losses. Such predatory pricing can be successful only if the firm is able to earn supernormal profits in later periods to offset the current losses. In turn this possibility depends on the existence of entry barriers. The question of entry barriers is discussed in greater depth in the following chapter; it is sufficient here to suggest that predatory pricing is unlikely to be prominent in competitive airline markets.

The remainder of this section examines three areas of concern which are closely associated with the notion of wasteful competition in the air transport industry: the provision of excess capacity, the airline equipment race and the occurrence of parallel schedules. Each of these cases
illustrates the general principles discussed above.

Excess capacity

A persistent fear expressed in the airline regulation debate is that open competition will force the industry into a state of chronic overcapacity. It is alleged that the normal market forces of supply and demand do not apply in the airline industry, resulting in the absence of any self-adjusting equilibrium and a built-in tendency towards overcapacity (e.g. Brenner (1975)). In particular:

the product of an airline can easily become excessive in supply as an operator’s competitive position is positively related so directly to the quantity of product.\(^\text{15}\)

Hence, it is argued:

\[ \text{... careful capacity regulation is a prerequisite for the survival of economically viable air transport operations.} \text{\textsuperscript{16}} \]

The capacity determination procedures of Australia’s TAP ensure control of the aircraft capacity available to be offered by the two major operators. Chippindall (1965) foresees the ‘creation of waste in unused capacity’ if this policy were to be abandoned. Similarly, when recommending retention of the principle of capacity control, DOT (1979a, p. 59) concludes:

\[ \text{... abolition or major relaxation of capacity controls could produce undesirable effects similar to those experienced overseas.} \]

The overseas experience referred to is probably that of the U.S. where, under Civil Aeronautics Board (CAB) regulation, the achieved load factor was consistently less than the target load factor. Consumers are alleged to suffer from the

\[ ^{15} \text{Department of Transport (DOT), Annual Report, 1975/76, p. 29. Civil aviation became the responsibility of DOT in November 1973 when the Department of Civil Aviation (DCA) was amalgamated with the previous DOT. Since its formation in 1938 DCA had been responsible for civil aviation.} \]

\[ ^{16} \text{DOT, Annual Report, 1974/75, p. 19.} \]
competitive overcapacity situation through the resultant upward pressures on costs and hence prices. Thus:

It was . . . the consideration of the public interest that we should not allow a free-for-all situation which in our view would force prices up rather than down.\textsuperscript{17}

A major problem with the excess capacity scenario presented above is that it pays insufficient attention to the ceteris paribus assumptions implicit in the argument. While it seems clear that, if all other factors remain unchanged, a more frequent schedule would offer an operator an advantage over his rivals, in a competitive market this strategy must be accompanied in the long run by a higher price. In this more realistic setting a higher price/higher quality product will not necessarily be preferred by consumers. The tendency towards overuse of frequency competition can be attributed to a lack of price competition, i.e. to the control of fares. In the U.S. case the regulated prices, which were set by the CAB on the basis of a specified rate of return at a target load factor, implied supernormal profits and, not unexpectedly, led to non-price competition, mainly in the form of increased scheduling.\textsuperscript{18} If the capacity offered is judged to be 'excessive', the blame lies with the authorities who set the price 'too high'. Hence, while Brenner (1975, p. 802) claims:

\ldots simple logic would suggest that, if the existing level of competition has created too many seats, totally unrestrained competition would create still more empty seats\ldots ,

the above discussion indicates that this logic, while simple, is also incorrect.

The observed experience of competitive airline markets also indicates little need to fear chronic overcapacity. ITA (1979) reports on the impact of the recent U.S. deregulation

\textsuperscript{17} Freeland, \textit{Hansard}, \textit{SCT}, 17 August 1978, p. 5591. Freeland was then Deputy Secretary (Policy and Planning), DOT and previously First Assistant Secretary, Air Transport Policy Division, DOT.

\textsuperscript{18} Thus Freeland, \textit{Hansard}, \textit{SCT}, 17 August 1978, p. 5591 incorrectly claims that overcapacity forced up costs and hence prices in the U.S.; the direction of causation was the reverse.
of civil aviation. It notes an increase in average load factors which was generally greatest on the most competitive routes. Similarly, there is little evidence of overcapacity in the post-war decade of supposed chaos in the Australian industry. Goodrich (1960, p. 138) notes that during the period 1945-1952 the provision of excess capacity could not be listed as a reason for either instability or poor profitability. For the period 1952-1957 he also remarks:

It has already been noted that there was virtually no control over aircraft importations... From time to time, concern had been expressed about excessive competition in re-equipment and consequent procurement of excess capacity... it is quite clear that the fears about the procurement of excess capacity were not justified by the facts.\(^{19}\)

**Airline re-equipment**

Competition among airline operators is often alleged to hold harmful implications regarding the related issue of the acquisition of new equipment. Paltridge states:

It is fundamental to the Two-Airline System that the airlines should not embark upon an equipment race as this would constitute a most damaging form of wasteful competition and would be contrary to the public interest.\(^{20}\)

Goodrich (1960, p. 219) notes that aircraft equipment decisions had a major impact on the performance of the Australian airlines during the post-war decade. For five years Australian National Airways (ANA) made little effort to provide an adequate alternative to TAA's Convair 240 which became Australia's first pressurised aircraft when introduced in 1948. TAA again made a superior aircraft choice when in 1954 it introduced Australia's first prop-jet, the Vickers Viscount; ANA had decided to operate the piston-engined DC6Bs in the previous year. The consistent inability of ANA to provide aircraft which matched the

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\(^{19}\) Goodrich (1960, p. 175). Goodrich qualifies his statement by suggesting that delays on aircraft imports due to dollar shortages may also have exerted a restraining influence on capacity.

\(^{20}\) Quoted in Brogden (1968, p. 158).
passenger appeal of its competitor was a significant determinant of its financial plight [see Brogden (1968, p. 78 and p. 103)]. Observing this Australian and some overseas experience, many concluded:

Unfettered competition could result in an equipment 'rat race' beyond the capacity of the industry to handle economically. In a small nation such as ours the whole industry could be jeopardised. [Hillyar21 (1969, p. 19)]

In 1958 the Government felt:

...it was clear that the stage would be set for a struggle by each airline to out-equip the other, regardless of the capital cost involved.22

Its response was to reject the airlines' requests for new aircraft (Electras for the Ansett organisation and Caravelles for TAA), and to exert a greater influence on equipment choice through the Airlines Equipment Act. Since comparable equipment was regarded as a prerequisite for stability, the airlines were obliged

...not to introduce aircraft of a type which, having regard to the types already in operation, would be detrimental to the stability of the air transport industry. This...obligation is, of course, designed to stop a wasteful re-equipment race leading to a multiplicity of new and expensive aircraft types.23

While Australia has not yet experienced any significant disruption through equipment choice under the TAP, it is not clear that an open airline market would lead to such 'rat races' or that the public has benefitted greatly from this feature of the policy. The Australian post-war experience

21 Then Secretary of Ansett Airlines of New South Wales.
22 Paltridge, Hansard, S, 1 October 1958, p. 757.
23 Paltridge, Hansard, S, 1 October 1958, p. 757. Paltridge also remarks that the two major operators willingly accepted this diminution of their managerial responsibilities. Note that this equipment race scenario seems to conflict with the argument, discussed in the previous section, that competition will hinder technological progress in aviation.
cannot be considered a rat race; rather it was the market penalising an operator, ANA, for making inappropriate choices of equipment. Thus any instability was confined to the relative market positions of the operators involved. In this regard the recent decisions of the two major operators to re-equip with wide-bodied aircraft of different capacities, the Airbus A300 and Boeing 767 for TAA and AAA respectively, is a potentially significant development for the industry. The use of different aircraft offers the possibility of increased competition between the operators through a greater differentiation of airline services, e.g. different schedules and frequencies, and perhaps even different fares if there are differences in operating costs and if the regulators permit such cost differences to be reflected in fares. If the use of different aircraft does have a significant impact on consumer choice it will be interesting to observe the Government's reaction this time to the self-induced market 'instability'.

The U.S. experience relating to re-equipment can be directly attributed to the poor system of CAB regulation [see Kahn (1971, p. 213)]. As noted above, the policy of controlling mainly prices stimulated non-price competition and hence placed greater emphasis on the type of aircraft in service. The problem was compounded by the failure of the U.S. regulatory authorities to allow quality differences in aircraft to be reflected in price differences; the CAB insisted that all operators charge a common fare for a given route service. Hence it became imperative to fly the most popular type of aircraft since there was no possibility of competing with a different price/aircraft type product mix. It follows that the responsibility for any wasteful under-utilisation of older or less popular equipment lay with the regulators rather than open market forces.

Another theme of the re-equipment issue is the effect of depreciation on prices and hence consumer welfare. It is frequently argued that aircraft must be used for a reasonable time to allow adequate obsolescence and to reduce the frequency with which heavy capital outlays are needed. For example, Goodrich (1960, p. 219) argues:

> ... airlines' operating costs would be inflated because of the high obsolescence and depreciation

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24 This view is expressed by Hillyar (1969, p. 19), Poulton (1959, p. 32), Richardson and Poulton (1968, p. 79) and Paltridge, Hansard, S, 1 October 1958, p. 757.
rates necessary when frequent re-equipment is forced upon them.

However, this argument has several shortcomings. Many industries are subject to the risk of technical obsolescence of their capital equipment. This is a naturally occurring risk which must be planned for in their investment decisions. The depreciation rates which are allowed for taxation or accounting purposes represent an expectation of the rate of decline in the economic value of an industry's capital assets. In an open market unanticipated technical obsolescence is reflected in a faster decline in the capital value of a firm's assets (assuming that there is no offsetting compensation in the taxation system). Consumers do not bear this burden but rather enjoy the benefits from the introduction of the new technology. In this environment managers have a clear incentive to make good investment decisions with respect to the technology of their operations. Managers who consistently make poor equipment decisions are likely to be replaced through takeover or bankruptcy, e.g. ANA's experience in 1957. Consumers suffer from technical obsolescence only in a regulated environment where policy aims to maintain the financial position of the existing firm. They are then forced either to continue to be served by inferior equipment or to pay higher prices which cover the additional capital losses which have occurred because of an inappropriate choice of equipment.

The argument regarding depreciation and technical obsolescence thus reduces largely to one of shifting the risks and costs of such events from shareholders of current firms to consumers. Paltridge confirms that Australia's aviation policy was so designed:

Unless the airlines are permitted to sustain disastrous capital losses by replacement of existing equipment before it is adequately obsolesced, we must plan on the present front-line equipment remaining in operation for at least several more years.26

25 Brogden (1968, p. 137) reports that in March 1957 the Government rejected an application from TAA to introduce Caravelle jet aircraft into service in 1959. The first pure-jet service was subsequently operated in November 1964 with Boeing 727s.

Parallel scheduling

Another example of wasteful competition caused by the pattern of regulation adopted by air transport authorities is Australia's controversial parallel scheduling. The practice is well documented and pervasive [see Gannon (1979a)]. Its waste lies in the restriction of choice of flight times and the extra demands placed upon airport infrastructure. Most observers agree with the proposition that parallel schedules are the natural result of competition in a system in which all the major attributes of the operators' products are identical, e.g. fares, aircraft type, total capacity and in-flight services. In these circumstances timetabling is the most significant means of non-price competition available. With this background, two operators and no threat of entry, simple economic theory suggests a tendency towards parallel schedules. However, the theory also suggests that this tendency would weaken if market entry were possible, if there were not only two operators, or if alternative means of competition, especially with prices, were possible. In this regard the recent choice by TAA and ATI of new wide-bodied aircraft with different capacities can also be expected to lessen the incidence of parallel schedules. However, the important point is that once again the fundamental cause of the observed wasteful competition is the existing regulatory policy.

Summary

This section indicates that the major forms of wasteful competition observed in airline markets are directly attributable to government intervention in the operation of open market forces rather than to these forces themselves and are unlikely to persist in a free market environment. There are two basic strategies available with which to respond to such wasteful competition: attempt to cast the regulatory net still further, or move to open competition and rely on market forces to satisfy consumer demands.

See Gannon (1979a) and Hocking (1972, Ch. 3). These results are based on the principles of spatial competition, of which Hotelling (1929) is the seminal work.
III. NETWORK CONSIDERATIONS

Allegations of abandoned services

An increased likelihood of deterioration or destruction of airline networks is another undesirable consequence frequently alleged to follow the introduction of open competition in airline markets. Teague (then Manager, Planning and Development, East-West Airlines [EWA]) states:

If in fact there is total deregulation I would be very very apprehensive about the possible results ... But in total I could see large areas of the country or large numbers of our communities receiving very very much worse services than is the case today. 28

Similarly, AAA (1979, p. 15) argues:

... a predator third operator operating only on the main trunk routes would affect the existing airlines in their important role in providing high quality services to lesser developed areas.

In analysing these claims it is useful to consider two possible regulatory situations. Firstly, there is the case where costs are covered on each route but profitability varies among routes. Secondly, there may exist cross-subsidisation where the losses on some routes are offset by the profits on others.

Routes of varying profitability

In the first case it is alleged that if the industry is deregulated existing and new firms will concentrate their activities in the most profitable markets to the neglect of those routes which are less profitable. The possibility of curtailment of such services underlies the unwillingness of the Australian Federation of Consumer Organisations [AFCO] (1978) to advocate complete removal of entry restrictions into airline markets. Ansett (1965, p. 13) appears to hold a similar view:

Additional operators interested only in the few routes with high density end-to-end traffic could impair the

28 Hansard, SCT, 16 May 1978, p. 4910.
overall competitive nature of the trunk route networks.

In this case any shift in capacity towards the most profitable routes would be due to the current restrictive regulation which is preventing operators from pursuing profitable investment opportunities. Wholesale market abandonments are unlikely since these services are profitable; although additional investments of existing and new operators will naturally be attracted in the first instance to the more lucrative routes. In these circumstances it is most likely that any difficulties will reflect short run adjustment to the enlarged set of investment opportunities, and in the longer term one could expect the maintenance and possible increase in services on all the profitable routes.

Cross-subsidisation of airline networks

Competition might be considered potentially more disruptive when cross-subsidisation exists within airline networks. The cross-subsidisation objective was warmly embraced in the past and at times appears to have significantly influenced policy. Brogden (1968, p. 42) and Goodrich (1960, p. 62) both report that the Corbett Committee29 considered that a large airline should be compelled to operate services on developmental routes, offsetting any losses from the profits earned on denser routes. One perceived advantage was the resultant reduction in the level of required government subsidies. The notion of cross-subsidisation was apparently well received at that time and used by the Australian Labor Party (ALP) as an argument in support of its attempted nationalisation of the airline industry in 1945.

The attractiveness of cross-subsidisation was not confined to only one political party; Menzies (then Leader of the Opposition and subsequently Prime Minister, 1949-1966) also saw the need for profitable routes to balance the losses on developmental routes.30 In later years it became an accepted part of the TAP. Consideration of this objective was an important factor in the selection of ATI as the new

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29 This was an Interdepartmental Committee on Civil Aviation with A.B. Corbett (first Director-General of Civil Aviation, 1939-1944) as Chairman. Its report was submitted in December 1943; the major findings, while not made public, were apparently well known.

30 *Hansard, HR,* 23 July 1945, p. 4355.
private partner in the policy in 1957:

... only Ansett Transport Industries Limited was prepared to proceed on the basis of the Government's declared policy of subsidising unprofitable feeder services... \(^{31}\)

Cross-subsidisation continues to have support; Smith (1978, p. 6) reports a statement by Nixon (Minister for Transport, 1975-1979) indicating that he considered the Sydney/Melbourne route to be a legitimate source of finance for the less profitable routes.

Cross-subsidisation could be expected to substantially disappear if free entry into the industry were allowed.\(^{32}\) Thus the maintenance of internal subsidies requires a system of economic regulation which prevents entry into the profitable markets. Not surprisingly, the existence of cross-subsidisation is often used to support a continuation of the current restricted entry under the TAP. For example, as a consequence of breaking down this policy, Chippindall (1965) foresees:

A tendency for the new operators to confine their activities to the more profitable routes, leaving the two main operators to bear the burden of the mass of unprofitable routes whose servicing is part of the overall responsibility for providing airline services which they have undertaken.

When assessing the desirability of cross-subsidisation the various arguments under consideration can be grouped into two broad classes: efficiency and equity. Economists are generally quick to reject cross-subsidisation on efficiency grounds. Since prices are not permitted to reflect marginal costs, resources are misallocated (there is a relative undersupply of air services in profitable markets) and an efficiency loss is imposed on the community.

\(^{31}\) Paltridge, *Hansard*, S, 13 November 1957, p. 1211. ATI accepted this cross-subsidisation obligation in return for a strengthening of the Rationalisation procedures and the provision of loan guarantees.

\(^{32}\) As will be argued shortly, the disappearance of cross-subsidisation is not necessarily equivalent to the disappearance of air services on the currently unprofitable routes.
It may be argued that government intervention is desirable; competition may be imperfect or externalities may exist. Some issues of relevance to this argument are discussed in greater depth in Chapter 5. Yet even if such claims are valid, economists seem virtually unanimous in advocating the use of direct subsidies to deal with such problems. The fact that government expenditures would be higher under such an approach is a misleading consideration since society incurs the real opportunity costs of the relevant services no matter how they are financed. It might also be argued that greater electoral opposition may arise to government initiatives involving direct subsidies; hence a system of cross-subsidisation may be the most politically effective means of attaining the desired objective. This argument suggests that it is the policy instrument itself rather than the policy goal per se which the community finds objectionable. However, the observed difference in community reaction is most probably due to a relative lack of information on the costs and benefits of cross-subsidisation rather than any intrinsic preference for this policy technique. One might hold doubts on the appropriateness in a democratic society of any policy which is incapable of being adopted when subjected to the public scrutiny of the government budgetary processes.

Even the equity arguments for cross-subsidisation are unconvincing. The equity justification seems to be based on the notion that air services should be available to all members of the community and that all consumers should pay an equal fare for what appears at face value to be the same product, i.e. equal distance travelled. Kahn (1971, p. 244) summarises an alternative viewpoint:

... advocates of entry restrictions in the trunk airline business have justified the internal subsidisation that they protect on the ground that small towns 'deserve air service' as much as large. It is not clear who, exactly, the people are in those towns who 'deserve' such service: presumably, they are the relatively well-to-do who can afford travel by air; nor is it immediately obvious by what morality

33 E.g. Levine (1965, p. 1428), Keplinger (1976, p. 198) and Smith (1978, p. 6). Payment of direct subsidies was the most important instrument of government influence in the early years of Australian civil aviation [see Goodrich (1960)].
they deserve to be subsidised in receiving such service, either by general taxpayers or by regular travellers over the routes... that can generate enough traffic to pay their way.

Cross-subsidisation clearly has important distributional implications. However, it seems preferable to base any redistribution policies on income or wealth rather than area of travel or residence. Perhaps it might be argued that the operation of certain unprofitable air services is to the net benefit of the nation. If this is so, why should only travellers on more profitable routes bear the cost of providing these services? These factors suggest to many that the cross-subsidisation of airline services can often be inequitable.  

The previous quote by Chippindall may be taken to imply that it is unfair that existing operators bear the burden of unprofitable routes when entry is unrestricted. However, this interpretation is of little value since any call for freedom of entry also, most sensibly, involves freedom of exit. Another strange perception of equity is presented by Confederation of Australian Industry (1980) which argues that cross-subsidisation in the airline system is acceptable and in the national interest since it would be 'unreasonable' to expect the major operators to set fares which ensure that all routes cover their costs!  

The policy of cross-subsidisation appears to have fallen from favour in recent years and is increasingly rejected. Transport regulators often express concern about the existence of cross-subsidisation and argue that pricing must reflect 'true costs'. The fare recommendations of DOT (1979a, p. 80) involve a closer alignment between prices

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35 Rowland, *Hansard, SCT*, 10 May 1978, p. 4713. Rowland was then First Assistant Secretary, International Policy Division, DOT.  
36 DOT, *Annual Report*, 1976/77, p. 18. While this statement most probably refers to networks as a whole, it is but a short logical step to argue that route prices should reflect route costs. However, DOT (1980b, p. 24) is not prepared to go this far. It recommends the continuation of fare setting using a 'nationally consistent approach' on the grounds of public acceptability and administrative convenience.
and costs. This aim was further reflected in subsequent adjustments to the airlines' fare formula which made more accurate allowance for economies of flight length and which changed the ratio of first class to economy class fares. Nixon also found it difficult to tolerate unlimited cross-subsidisation. He supported TAA's unsuccessful attempt to sub-contract two unprofitable Queensland routes, Brisbane/Mt. Isa (via ports) and Townsville/Mt. Isa (via ports), to Bush Pilot Airways (BPA) and suggested, not too subtly, that he would consider directing the maintenance of the existing TAA F27 services if 'the State is prepared to subsidise the losses incurred on these services' [DOT (1979c)]. Finally, the airlines themselves express some opposition to cross-subsidisation:

The industry cannot accept the proposition that air travellers on major trunk routes... should subsidise travellers on rural or outback services from which the Government has no chance of recouping its expenditures. [Ansett (1976, p. 54)]

However, in spite of this statement, it was noted above by Paltridge [see footnote 3] that Ansett found cross-subsidisation to be acceptable when combined with other more favourable policy features.

**Effects of competition on airline networks**

While the above discussion examines the general issue of cross-subsidisation, an assessment is still required of the claim that many services would be lost if the present policy were abandoned. The potential for disruption might be expected to depend on the extent of cross-subsidisation now present in the airline system. Although no detailed cost information is currently available, the evidence suggests its existence. Hocking (1972, p. 38) concluded that the industry was characterised at that time by cross-subsidisation. The fare formula which was subsequently introduced in August 1974, and which was based on the average costs of servicing an entire network and consisted of a flagfall (reflecting the cost of terminal facilities) and a rate per kilometre covering

37 One of the main tasks of the recent Independent Public Inquiry into Domestic Air Fares is to report on the degree of cross-subsidisation in the networks of the two major operators.
operating costs), was a recipe for cross-subsidisation since it failed to recognise that passenger costs can vary across routes. In particular, the fixed cost component varies with traffic density and operating costs per kilometre decline as stage length increases. If regulation has been successful in limiting total airline profits to normal levels, the fare formula would seem to imply cross-subsidisation, not merely price discrimination. The investigation by Gannon (1979b, p. 147) confirmed that the air fare formula then resulted in an apparent cross-subsidisation of short distance routes by long distance routes. Gannon also concluded that the F27 network as a whole was cross-subsidised from other services. Further evidence on the existence of cross-subsidisation is provided by the airlines themselves who claim to operate some unprofitable services. Forsyth (1979, p. 69) notes reports indicating that in 1976/77, when its profit was about $7m, TAA lost $1.5m on the two Queensland routes mentioned above. Nixon confirmed that TAA was unable to cover its operating costs on these routes [DOT (1979c)].

Even though substantial cross-subsidisation may exist, it does not necessarily follow that open market competition and the resultant tendency to eliminate such internal subsidies will cause a massive loss of services throughout the country. While an existing airline may be unable to achieve profitable operations on a certain route, it is not valid to conclude that some other carrier (with different schedules, equipment, etc.) could not do so. In an open market other operators would most likely be quick to service any route vacated by the two major airlines. This contention is supported by the U.S. deregulation experience where few routes have been abandoned and not taken over by others [see ITA (1979)]. In addition, Australian commuter operators have generally taken over unprofitable feeder services which the major carriers have ceased to operate. It is quite possible that many previous loss routes will enjoy increased services from their new operators.38

38 See Bureau of Transport Economics [BTE] (1978, p. 58). BPA (1977, p. 7 and Appendix 2) gives numerous examples of routes which it has taken over from the major operators.
travellers may still view this as inferior to the previous operations of a major airline. An example of this was the community hostility towards TAA's proposal to sub-contract some Queensland F27 services to BPA. It is doubtful that this preference would be so strong if the local community involved were obliged to pay the full cost of the alternative services.

Summary

The discussion in this section indicates that little effort has been made to provide a valid justification for the cross-subsidisation apparently now present in the airline system. Apart from the aim to reduce government expenditures, it appears that any public welfare and income redistribution goals which are supposed to underlie current policy can be more effectively achieved by direct subsidies. If this proposition is accepted, it follows that the true impact of the policy of economic regulation of airline markets is not to protect air service networks, but rather to achieve income transfers between various consumer groups in a politically effective manner and to provide a rationale for shielding existing operators from the effects of competition.

IV. CONCLUDING REMARKS

When discussing civil aviation deregulation in the U.S., Hewitt (Chairman of Qantas, 1975-1980) states:

This is not an industry in which cut-throat competition is good for the consumer.\textsuperscript{39}

However, this chapter suggests that there is little evidence to support the assertion. Apparent examples of the undesirable effects of competition usually can be more accurately traced to poor regulation rather than open market forces per se. It appears that the inefficient operator, not the consumer, has most to fear from competitive airline markets.

\textsuperscript{39} Quoted in \textit{Traveltrade}, 21 January 1980.
Competition Among Airlines: Too Little?

Fears of monopoly

Fears that the Australian domestic air transport industry would develop into a monopoly and that this would be inimical to the community’s welfare have always loomed large in the airline regulation debate. Drakeford (ALP Minister for Civil Aviation, 1941-1949) claimed

... abundant evidence that a monopoly is inevitable in the near future.\(^4^0\)

Dedman, then ALP Minister for Post War Reconstruction, viewed the threat as more immediate:

... the Government is entirely opposed to private monopolies ... in my opinion, the present airline operators in Australia have a monopoly of that industry ... the conduct of a monopoly by private enterprise is, in effect, immoral.\(^4^1\)

Responding to this perceived threat of monopoly:

The Chifley Government decided that something should be done to prevent that monopoly [Australian National Airways Proprietary Limited] from fleecing the Australian people.\(^4^2\)

Antipathy towards an air monopoly was not limited to the one political party. Menzies stated that it was

... no part of the policy of the Government to foster

\(^4^0\) Hansard, HR, 18 July 1945, p. 4179.

\(^4^1\) Hansard, HR, 25 July 1945, p. 4559. A crucial word in this statement is ‘private’.

\(^4^2\) Drakeford, Hansard, HR, 30 October 1952, p. 3967.
either a government monopoly or a private monopoly on the major air routes.43

Even in more recent times the fear of monopoly continues to influence air transport policy considerations. At a recent Federal Council of the Liberal Party, a Western Australian resolution recommended the sale of TAA,

... with appropriate legislative provisions designed to prevent a single monopoly taking control of the major national airline system.44

The natural monopoly argument

The theoretical economic basis underlying this attitude towards a monopoly market structure and calls for government intervention is the so-called 'natural monopoly' argument. If the technological conditions of production are such that the firm's long run average costs decline over the entire market size (i.e. there are economies of scale), then a single firm will always be able to supply any given quantity of output at less cost than if there were more than one firm. Hence there is a natural tendency for the industry to become dominated by a single firm. The argument asserts that, once this situation is established, the single profit maximising firm will be able to exert its monopoly power and earn supernormal profits.

This simple account of monopoly pricing associated with economies of scale can be represented in the following diagram.

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43 Hansard, HR, 21 November 1951, p. 2399.
44 Reported in Daily Telegraph, 9 April 1980.
A firm with monopoly power maximises its profit by producing where marginal revenue equals marginal cost; then \((P_1, Q_1)\) is the monopoly price/quantity outcome. Advocates of the natural monopoly argument prescribe regulation to prevent entry (so that a single firm can take advantage of the economies of scale) and the control of price. Price may be regulated to the zero profit level \(P_2\), or ideally (to achieve Pareto optimality) to \(P_3\), where some arrangement can be made regarding the resultant losses of the firm. Note that already there is an apparent inconsistency in the policy prescription: the desire for regulation is motivated on the one hand to capture the benefits of economies of scale (which are allegedly endangered if firms are free to enter the industry) and, on the other hand, to prevent monopoly pricing (which supposedly occurs if there is only one firm).

This simple theoretical argument has frequently been presented and discussed in the airline industry context.\(^4\)\(^5\) Two questions must be investigated. Firstly, is the natural monopoly argument applicable to the Australian air transport industry, i.e. are there economies of scale in the provision of airline services in this country? Secondly, is the argument valid from a theoretical viewpoint?

**Economies of scale**

In the course of the Australian airline regulation debate many of the participants have claimed the existence of significant scale economies and hence a natural tendency towards monopoly. Brogden (1968, p. 60) reports that during the post-war decade all except Ansett believed that there was room for only one major airline on domestic routes. Drakeford considered ANA an 'inherent monopoly'.\(^4\)\(^6\) The Corbett Committee concluded that it was desirable to have only one airline company operating all Australian air services, since it would be able to do so more efficiently and economically than a larger number [see Goodrich (1960, p. 61)]. This conclusion was also supported by the Nixon review of 1951.\(^4\)\(^7\)

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\(^5\) Hansard, HR, 30 October 1952, p. 3975.

\(^6\) E.V. Nixon and Partners, a firm of chartered accountants, was appointed by the Menzies Government to investigate the economic and financial basis of the airline industry [see Brogden (1968, p. 94)].
Economies of scale appear to have played a major role in the decision of the Menzies Government to introduce its TAP. In a letter to the Chairman of ANA dated 28 March 1952, Menzies wrote:

"... we have discussed the future of the airlines in terms of two operators because ... in our present state of development there is no room for more than two major national operators if the necessary standards of efficiency are to be maintained."  

Again, at the time of the strengthening of the TAP in 1957:

"... [the Government] could not escape the definite conclusion that even the trunk route system could not support more than two major airlines."  

Some academic contributions have also given support to the claim that scale economies exist in the airline industry. Goodrich (1960, p. 149) argues that if the industry consisted of only private firms then a monopoly would probably develop as a result of economies of scale.  

Similarly, Hocking (1972, p. 50) concludes that there were still considerable economies of scale to be reaped in the Australian market; if firm size were doubled, unit costs might fall by 10-20 per cent.

More recently DOT (1979a, p. 74) found:

"the size of the Australian market would not support a third carrier on the trunk network as a whole and therefore the Government should continue to control entry ... to maintain the Two Airline Policy ...,

while Dignam (1979, p.10), then Assistant General manager of TAA, argued:

"Our small domestic market means that optimum

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48 Quoted in Goodrich (1960, p. 142).
49 Paltridge, Hansard, S, 3 September 1957, p. 82.
50 Goodrich's final position on this question is unclear; he also recognises that a private monopoly is not inevitable (p. 149), argues that a TAA monopoly would not likely have developed if ANA had left the industry (p. 140), and concludes that the conditions for the natural monopoly argument do not apply to air services (p. 84).
economies of scale are not always achieved.

Another popular viewpoint is that a private enterprise monopoly is inevitable if the government-owned TAA should cease to operate.\footnote{See Brogden (1980, p. 117), Morris (1980b) and TAA (1980). Morris is the ALP Shadow Minister for Transport.}

However, a careful consideration of the nature of airline costs raises doubts as to the applicability of the natural monopoly argument to this industry. The prerequisite for economies of scale is declining long run average costs. On the demand side economies of scale may arise from the number and diversity of markets served. Variations in demand may tend to compensate each other causing economies of operation. However, as Kahn (1971, p. 123) notes, diversity of demand is not necessarily an argument for monopoly; it is more likely to indicate the desirability of integration of operations across markets.

Economies of scale more typically are associated with the presence of substantial fixed costs in an industry. It is not however the mere existence of fixed costs which indicates economies of scale; this point is obvious when it is remembered that in the long run all costs, by definition, are variable. The relevant issue is whether or not there are increasing returns from the provision and utilisation of larger amounts of these fixed cost facilities. Thus statements pointing out the degree of fixed costs associated with airline operations do not, by themselves, provide conclusive evidence regarding economies of scale. Such statements are more likely to provide information on short run average costs and hence are of more direct relevance to the question of destructive pricing which is examined in Chapter 1.

While the presence of significant fixed costs does not necessarily prove the existence of economies of scale, statements regarding the absence of such costs can often be more informative on the issue. Since the main potential source of economies of scale lies in the provision of fixed cost capital assets, a low ratio of fixed to variable costs probably lessens the chance of such scale effects. Hence the strong consensus, noted in the previous chapter, among economists that the airline industry is characterised by a low ratio of fixed costs to variable costs supports the contention that substantial economies of scale are unlikely.

The presence of economies of scale in the airline

\footnote{See Brogden (1980, p. 117), Morris (1980b) and TAA (1980). Morris is the ALP Shadow Minister for Transport.}
industry has also been examined in a wide range of empirical studies. This research indicates that, while network characteristics such as average stage length and traffic density are important determinants of airline costs, firm size per se has little independent influence on average costs. The common conclusion is that economies of scale are not significant beyond a certain minimum efficient scale of operations of around five aircraft.\(^{52}\) Mackay (1979) estimated a regression model of airline costs and found that if TAA and the Ansett airlines were merged then average costs would decline by 4 per cent. Alternatively, if a third airline were introduced and each airline had equal market shares, then average costs would rise by 2.5 per cent.\(^{53}\) In summary, there is a lack of statistical evidence supporting the existence of substantial economies of scale in Australian airline operations.

Theoretical validity of the natural monopoly argument

While most researchers have rejected the applicability of the natural monopoly argument to the airline industry, there has been no serious questioning of the argument's theoretical validity. For example, Levine (1965, p. 1424) claims that there is 'general agreement upon the economic necessity of regulating natural monopoly industries' and Smith (1978, p.12) considers it apparently 'unimpeachable'. However, Demsetz (1968) drew attention to a non sequitur in the natural monopoly argument. Although economies of scale may result in a single firm in an industry, it does not necessarily follow that this firm has the ability to monopoly price. That ability comes from establishing barriers to entry into the industry and these two phenomena, scale economies and entry...
barriers, are quite distinct.

The above diagram illustrates the argument. The natural monopoly outcome \((P_1, Q_1)\) is not a stable equilibrium. The supernormal profits earned by the firm at that point attract other firms who, given no entry barriers, can enter the industry, undercut the monopolist and capture his entire market. Thus there are pressures for the price to fall below \(P_1\). In the simple exposition of the natural monopoly argument which is usually presented the only stable equilibrium appears to be the zero profit outcome at \((P_2, Q_2)\). McKenzie and Tullock (1978, p. 217) even show the possibility of the natural monopolist producing the Pareto efficient output, by selling \(Q_2\) units at price \(P_2\), then expanding output to \(Q_2\) through price discrimination.

This analysis implicitly assumes that firms can costlessly enter and leave the industry. In this simple world of zero adjustment costs there can be no deterrent to entry into the industry since if entry is unsuccessful the firm is able to shift its capital resources into other activities without penalty. In this setting the duplication of capital assets also imposes no social cost on the community.

In reality adjustment costs do occur. A major determinant of these adjustment costs is the extent to which the unsuccessful firm can recover its capital investment, i.e. the value of its assets in alternative uses. Costs of entry and exit will be relatively high when a firm's production process is characterised by significant sunk costs resulting in its capital assets having little value in alternative uses. This situation most often occurs when capital assets are long lasting and highly specific. The presence of these adjustment costs opens the possibility of deterring entry since the existing firm is able to ignore its sunk costs in any potential competitive pricing battle. Likely outcomes in this situation depend on the assumptions made about firms' reactions to the initiatives of competitors; these cases can only be investigated with more complex analysis. However, the point remains that it is the nature of capital assets, i.e. the importance of sunk costs, which influences a firm's adjustment costs and hence ease of entry, and this consideration is independent of the question of economies of scale.

This discussion can be illustrated with some simple examples. A railway track between two country centres probably has little value in alternative uses, e.g. digging up and laying elsewhere or using as scrap. Hence a significant part of the value of the track will represent sunk costs. This feature is likely to deter entry, give railway firms some
power to price above average costs, and impose social costs on the community if the track facilities are duplicated by competitors. However, such is not the case for airline operators. The previous chapter noted that their fixed cost assets seem quite mobile and possess a relatively high value in alternative uses. Unsuccessful airline firms are thus able to recoup a significant proportion of their capital investment. In these circumstances it is likely that entry will be easier, airlines will have less pricing power and social costs from duplication will be minimal.

The threat of competition

A common error in discussions of market structure is the failure to distinguish between the concepts of competition and market concentration. Thus attempts to increase the competitive nature of an industry by fixing the number of firms operating in the industry (e.g. a Two or Three-Airline Policy) have no guarantee of success. Similarly, when entry and exit costs are small a high degree of market concentration holds little threat to consumer welfare. The influence of the above ideas is reflected in the importance given by some recent writers to the market policing roles of 'potential competition' and the threat of entry.\footnote{E.g. BTE (1978, p. 60), Forsyth and Hocking (1978, p. 4) and Kirby (1979, p. 113).}

ATI (1980, p. 19) claims that it is impractical to suggest that the threat of competition would have a beneficial effect. Its argument is based on the long lead time which it alleges is necessary to put new aircraft equipment into operation. Yet it seems clear that there are many potential sources of competition for the major domestic operators, e.g. international and regional airlines and commuter and freight operators. Market access and the availability of aircraft through import controls appear to be more significant barriers than lead times. For example, Qantas (1980) claims that it could immediately operate long-haul domestic services with economy fares of about 70 per cent of those currently charged. Cabotage, the use of the spare capacity of international carriers on domestic routes, also offers prospects of immediate different choices of air services.

Kahn (1971, p. 12) summarises this discussion:

The possibility of competitive entry is the principal...
limitation on monopoly power in a market economy. 55

Also in this regard Walsh (1951, p. 44), then Acting General Manager of ANA, clearly recognised, and later felt, the real limits to his firm's supposed monopoly power:

ANA would have no monopoly except the monopoly that arose from doing the job better than the others could. For private enterprise can compete with us any time it likes. If we fell down it would. Such competition would be fair competition. We both would not survive - that would be an economic impossibility. The most efficient would survive. And that is one of the major virtues of freedom of enterprise.

Barriers to entry

The above discussion leads to the conclusion that the existence of economies of scale is not a sufficient condition for the monopoly pricing outcome to result and hence for a justification of government intervention. We must consider whether or not there are significant barriers to entry into the airline industry.

Callison (1975, p. 776) considers the possibility of new entry into air transport 'naive'. Effective entry barriers are frequently alleged to come from the high capital costs of the industry, product differentiation and absolute cost advantages of existing operators. Hocking (1972, p. 49) suggests that these provide 'significant economic obstacles' to potential entrants.

While the current operations of the major airlines undoubtedly represent a large business undertaking and modern aircraft equipment is not inexpensive in absolute terms, this does not necessarily exclude entry. Apart from the capital costs issue examined above, this argument must rely on capital market imperfections which bias the availability of funds for large scale investments. However, while the size of the necessary investment has increased over the years, the capital market in Australia has also become more developed.

Kahn also notes:

No barrier to entry is more absolute than one imposed and enforced by the sovereign power of the state.
making it difficult to draw firm conclusions as to whether it would be harder to finance a new airline operation now than in the past. It is also often assumed that new entrants would be of a similar size to the current major operators. DOT (1979a, p. 74) adopted this view when it rejected competition on the trunk routes. However, this presumption is not necessarily the case. A new operator could start small by concentrating on only part of the entire network and, if successful, grow over time.

It is unlikely that product differentiation forms a major entry barrier. The nature of the product is such that any firm offering a price/service combination more in tune with consumer preferences will probably find ready market acceptance. Similarly, since airline technology on both the marketing and equipment sides is available to all, it is considered unlikely that there are significant absolute cost advantages in favour of the existing operators.

Additional evidence on the question of whether there will be too little competition in an open market for air services comes from the empirical observation of such markets. The Californian intrastate market revealed no tendency for a monopoly to develop and the success of the intrastate Pacific Southwest Airlines demonstrates the ability of an efficient, specialist operator to survive [see Levine (1965, p. 1439)]. The Australian experience also provides some evidence on the relative ease of entry into airline markets and the improbability of monopoly pricing behaviour. Goodrich (1960, p. 89) notes that, despite the highly concentrated nature of the industry (ANA held 80-90 per cent of the market), there was, after allowing for wartime conditions, no evidence that ANA either achieved monopoly profits or adopted restrictive practices in establishing and maintaining its market position in the period to the end of the Second World War. During the post-war decade, a relatively competitive period for Australian aviation, Ansett was able to increase its market share by specialising in the tourist market and offering a lower price/lower quality choice. Similarly, TAA offered a service that was so readily accepted that it captured over 40 per cent of the market on inter-capital routes within a year of commencing operations in 1946 [Goodrich (1960, p. 97)]. TAA's spectacular success demonstrates the ease of entry into airline markets when a new firm has a superior or innovative product to offer consumers, although it must be acknowledged that in this case the attractiveness of the new service was enhanced by the preferential treatment which
TAA received from the ALP Government of that time [see Chapter 3]. More recently, the widespread granting of commuter authorisations over the network of Ansett Airlines of South Australia and the resultant adverse effect on that regional airline again illustrates the ability of new operators to enter a market and to succeed in attracting consumer patronage away from existing firms.56

Summary

Monopoly exploitation of consumers has been one of the most popular themes of the Australian airline regulation debate. Yet the validity of this argument is most doubtful. There is virtually no empirical evidence to support the view that there are significant economies of scale in the provision of airline services. An examination of the nature of airline operations also suggests that, apart from government actions, there are few substantial barriers to entry into markets for air transport. Thus existing operators can be expected to have relatively little pricing power under open market conditions. Finally, the limited experience with competitive airline markets in the U.S. and Australia does not support the view that consumers will face monopoly exploitation in an airline industry which is free of restrictive economic regulation.

56 See ATI, Annual Report, 1978/79. ATI questioned whether the policy of permitting such market entry by commuters was ‘in accord with the best interests of the travelling public’.
A Question of Ownership

One of the special characteristics of the Australian domestic air industry is the presence of a government-owned firm operating in the same market as a privately-owned one. Hence it is necessary to examine the rationale for, and implications of, government ownership in the civil aviation field.

The rationale for government ownership

The rationale for the introduction of a government-owned firm into an industry generally lies in the perception of an inadequate performance by private enterprise. Because private firms are influenced by the profit motive, it is sometimes believed they would not serve the national interest and might exploit the community. Thus, it is alleged, a government airline would offer superior service and safety to passengers and prevent exploitation of the community by

57 In addition to the state versus private enterprise debate, considerations of foreign ownership have also played a role in domestic civil aviation policy. Corbett (1965, p. 49) and Brogden (1968, p. 48) both suggest that a traditional and instinctive fear of British shipping interests was an influential factor in the ALP's aviation policy of the 1940s. It seems that Britain was not the only external threat; Calwell (Leader of ALP Opposition, 1960-1965) suspected that Ansett had 'a lot of American money behind him' (Hansard, HR, 30 September 1958, p. 1965). Apparently there was no justification for discriminating among nations; the Liberal Party subsequently adopted the policy that there would be no foreign takeover or control of ATI (Cotton, Hansard, S, 13 April 1972, p. 1065).

58 E.g. McKenna, Hansard, S, 1 October 1958, p. 765. McKenna was Opposition Leader in the Senate, 1951-1966.
private companies. Often the desirability of a government firm is linked with the likelihood of the development of an industry monopoly. For example, Dedman asserts:

... when an industry develops to the stage at which naturally a monopoly can give a more efficient service than can be given by a number of independent companies it should pass from private ownership to control by the Government. That is when it should be nationalised.

In addition to the benefits of a government firm in its own right, it is sometimes argued that even greater advantages flow from a system in which government and private firms actively compete in the same market. This argument is presented by Kahn (1971, p. 104), while Corbett (1965) is the leading proponent with respect to the Australian airlines. Corbett (1965, p. 117) introduces the concept of 'metaphism' ('the system of regulated competition between public and private enterprises, each having a substantial share of the industry's market') and claims that 'metaphytic competition' produces substantial political, administrative and economic benefits. Firstly, rivalry between the airlines provides the stimulus to draw out the best qualities of each system (the initiative of private firms and the public interest considerations of state-owned companies) and to suppress their respective undesirable qualities (exploitation and bureaucratic smugness). Secondly, each firm provides a ready yardstick with which to gauge the performance of the other. Closely related to this is the claim that the existence of a government firm is an aid in the economic regulation of the industry. Finally, this system is alleged to provide political peace by satisfying the champions of both private and government enterprise.

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60 Hansard, *HR*, 25 July 1945, p. 4563. This view is also supported in *The Age*, Editorial, 31 October 1961.
61 Hurford, *Hansard*, *HR*, 28 March 1972, p. 1237 offers a novel proposal to capture the benefits of both competition and state ownership: he suggests competition between two government-owned airlines!
62 DOT (1979a, p. 61) supports the retention of TAA on these grounds.
The experience from Australian aviation

Other observers of the performance of the airline industry under the TAP have concluded that the benefits of metaphism are, at least in this case, largely illusory. Instead of stimulating each other to greater heights, the two operators, free from any outside threat to their markets, may in fact settle for the 'quiet life'. So, while they may be observed to be performing equally, it may be equally poorly. Wilson (1962, p. 61) notes that the yardstick benefit is limited in any practical sense; this is especially so for members of the public who do not have access to the data necessary to directly compare the performance of TAA and AAA. Finally, it is unlikely that the policy would placate the passions of those actively concerned with the state and private ownership dispute. The bitterness of past parliamentary debates concerning civil aviation provides testimony to this point.

One sideline to the ownership question is the controversy as to whether or not the state firm is less efficient than the private firm. Ownership per se has become regarded as increasingly irrelevant in determining a firm's performance; it is the aims, quality and techniques of management that are often considered to be more important.

Certainly the ALP considered TAA to be significantly different from a private firm:

... the primary aim of the Commission is not to seek profit, but to administer the airline with safety, efficiency and economy.

However, one of the consistent thrusts of the TAP over the years has been to minimise the differences between TAA and its private competitor [see Appendix 1]. As well as the most obvious areas such as fleet comparability, capacity determination and the Rationalisation procedures, amendments to the Australian National Airlines Act have attempted to put TAA on a similar commercial basis to ATI. For example, the 1961 amendments set dividend targets for TAA and prevented

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63 The economic performance of the major airlines is discussed in Chapter 6.
64 In the airline context see Wettenhall (1966, p. 72), Corbett (1965, p. 39) and Smith (1978, p. 103).
65 Evatt, Hansard, HR, 29 October 1952, p. 3874. H.V. Evatt was Leader of the ALP Opposition, 1951-1960.
the airline from utilising its self-insurance funds, while in 1973 TAA was given the power to broaden its activities into areas incidental to its airline operations. The most recent revisions, which were put before the Parliament in 1980 IDOT (1980a)], continue the effort to ensure that

... the two airlines ... as far as practicable, enjoy comparable cost structures.66

Hence one outcome of the TAP is that the TAA management perceives its goals to be similar to those of a private company. For instance, the then General Manager of TAA, Ryland (1967, p. 25) notes:

... TAA in its day-to-day activity operates on the most vigorous of commercial enterprise lines.

Such similar management objectives, as well as the need to operate within the same regulatory environment, have important implications for the ownership question. Firstly, these factors tend to invalidate the metaphism hypothesis. In particular, the need for a government-owned firm to aid economic regulation becomes doubtful. Edwards (1969, p. 118) argues that state ownership is essential for influencing airline behaviour when sharp divisions exist between government objectives and normal commercial goals. Since Australian policy seeks to ensure that TAA behaves in a similar fashion to its private competitor, state ownership appears to offer little advantage for purposes of economic regulation. Even the ability to modify the behaviour of private companies through the threat of preferential treatment of the state firm is not a conclusive advantage of state ownership, since the existence of state ownership is clearly not a necessary condition for such preferential treatment (e.g. the position of ATI vis-a-vis other private Australian air operators).

Secondly, the possibility of the two operators performing to different standards of efficiency is reduced. In this regard it seems strange that Dedman was able to support the establishment of TAA on this very issue:

It has been pointed out by many students of industrial organisation that there is very little difference between a large modern industrial company and a

public enterprise itself.\textsuperscript{67}

However, Davies (1971, 1977) argues that a state corporation is likely to be less efficient than a private firm due to an inability to transfer ownership.\textsuperscript{68} Under private ownership some individuals have relatively large shareholdings (compared with the infinitesimally small share each person 'owns' of the government firm), and hence have increased incentive to maintain a check on the firm's performance. Individuals are also able to specialise by owning shares in firms for which they have a comparative advantage in knowledge and monitoring ability. Davies supports his argument by considering various labour productivity measures.

The impact of Davies' hypothesis might be expected to be weak in the airlines' case since, as noted above, Australia's stringent regulatory policies have been directed towards making the airlines as similar as possible. However, for this very reason, any observed differences can perhaps be considered more significant. Davies' empirical approach is also open to the criticism that the productivity differences which he observes may be due to factors other than ownership, e.g. scale effects, route structure and airline equipment.\textsuperscript{69}

However, some further evidence to support Davies' thesis comes from Mackay (1979) whose regression analysis takes into account many of the factors likely to influence airline costs and performance. His study indicates that, while both airlines have costs which are higher than might be predicted, TAA performs relatively less efficiently than the private company. For example, in 1975 TAA's costs were estimated to be 16.8 per cent higher than might be expected, while those of the Ansett airlines were 12.8 per cent higher. An overview of this ownership issue suggests that, while there appears to be some theoretical and empirical evidence that the state firm is less efficient than the private one, this difference is likely to be small compared with the inefficiencies of both operators which are due to the current policies of economic regulation.

\textsuperscript{67} Hansard, HR, 25 July 1945, p. 4560.

\textsuperscript{68} Davies also recognises that a regulated private firm is likely to be less efficient than an unregulated one.

\textsuperscript{69} These issues are also discussed in Forsyth and Hocking (1980) and Davies (1980).
Problems induced by government ownership

The introduction of a state-owned company into an industry also presents some distinct problems. There are important difficulties in achieving equilibrium in an industry with both state and private operators. In the words of Menzies:

"... everybody in Australia knows, that if a government is in a business such as air navigation, and a private concern is in the same business in the same field, then the government can, subject to control or statute, destroy its competitor at its own sweet will." 70

In the past the private airline operators had no reason to doubt this to be a realistic possibility under an ALP government. Evatt informed the Parliament:

"A future Labour government will frankly tell the people that the new parliament will not be bound by its predecessor." 71

In addition, the private operators had already observed the preferential treatment given to TAA in the immediate post-war period. ATI (1980, p. 4A) lists some of the advantages which it claims TAA enjoyed; these include favourable loans, all Government business, no dividend requirements and favoured treatment regarding airport facilities and aircraft permits. DOT (1979a, p. 36) acknowledges that TAA then received major competitive advantages over its rivals. Even to the present, ATI's attitude towards airline regulation continues to be dominated by a perceived need to ensure protection from the actions of a hostile government [see ATI (1980)].

70 Hansard, HR, 30 October 1952, p. 3987.
71 Hansard, HR, 29 October 1952, p. 3883. Evatt's backbenchers were somewhat more blunt: "As soon as the Labour Party regains power, and that will not be long delayed now, we shall run Australian National Airways Proprietary Limited out of the air and make Trans-Australia Airlines a Government monopoly." [D.J. Curtin, Hansard, HR, 22 May 1952, p. 789]
While the ALP's policy has since changed to one of:

an evenhanded 2-airline agreement under which the two airlines will be operating on identical terms\textsuperscript{72}

a fear remains that, for a given situation and no matter how unbiased are government actions, the private firm faces a greater risk of exit from the market than does the state firm. This fear is real\textsuperscript{73} and seems reasonable. In these circumstances competition between state and private firms can never be truly 'fair'. This then is the 'Australian problem' for which Brogden (1968, p. 202) considers the TAP to be the valid and only long term answer.

\textbf{Relevance of the ownership question}

Many authors have recognised that the sale of TAA to private interests within the framework of the TAP would result in little change in the overall performance of the industry. Hence the ownership question is often seen as a 'red herring'.\textsuperscript{74} However, Ansett (1979) notes:

There would not be the same necessity for these provisions and facilities if the competing airlines were both privately owned and shared identical responsibilities to those of other public companies in this country.\textsuperscript{75}

It seems then that, rather than being an irrelevant issue, the state ownership of TAA is a crucial political obstacle to open market competition in Australia's civil aviation industry.


\textsuperscript{73} '... should that airline [TAA] fail to achieve any profit its survival capability is unaffected.' [Ansett (1979)] Of course there may exist other private operators who are prepared to accept this additional risk.

\textsuperscript{74} \textit{Australian Financial Review}, Editorial, 17 May 1979.

\textsuperscript{75} Note that this statement also implicitly dismisses the many other arguments raised in support of economic regulation of the airlines.
The Safety Issue

The concern for air safety

The issue of air safety has undoubtedly been an important consideration in both the debate on airline regulation and the civil aviation policy formulation of all Australian governments. The provision of safe air services has been a major objective of such policies. Drakeford considered:

'Safety must be the first consideration in air transport' while Nixon (1978, p. 13) urges that air accidents are to be avoided 'at all costs' as

it is the Government's policy to maintain aviation safety at the highest possible level.

A domination of aviation matters by safety considerations is supported by Hewitt (1979a, p. 4) who argues:

no issue ... is more important than operating safe airlines

and by AFCO (1978, p. 12) which holds the view that the primary role of government is to ensure safety.

Safety and economic regulation

Throughout the airline regulation debate many writers have attempted to link the safety performance of air transport firms with their financial positions and hence with economic regulation of the industry. In particular, a constant theme is

76 Hansard, HR, 6 November 1951, p. 1545.
77 Hansard, HR, 16 August 1978, p. 355.
the incompatibility of safety with the profit motive and the competitive process. 

Brogden (1968, p. 200) considers 'the profit motive is not the vital factor' in maintaining high safety standards, while another contributor asserts:

... most aircraft accidents resulted from the anxiety of private enterprise to make more dollars regardless of the sanctity of human life.79

The relative lack of concern for profits by a state-owned firm was thus often thought to have favourable implications for the safety standards offered by that firm. This point is clearly made by Calwell:

Ansett-ANA is run for profit. TAA is run for the benefit of the people. Both airlines conform to the requirements of the Department of Civil Aviation, but TAA does spend more on maintenance and is more careful. It goes further than ANA can afford to go as a private enterprise, profit-making organisation.80

Since the existence of profit-motivated private firms is likely to have a harmful impact on safety, then it allegedly follows that open market competition among such firms can only exacerbate the problem. Thus there is no question that 'rat race' competition can and does lower safety standards [Brogden (1968, p. 200)],

and hence:

the development of fierce competition between the two major airlines would lead to disaster in the future.81

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78 The discussion is naively simplified by a tendency to categorise air services as either 'safe' or 'unsafe'. This approach is retained at this stage, but criticised below.
79 Haylen, Hansard, HR, 29 October 1952, p. 3892.
80 Hansard, HR, 30 September 1958, p. 1761.
The economic position of an airline operator has been claimed to affect air safety in several ways.\textsuperscript{82} Firstly, firms may be undercapitalised or of weak financial strength due to insufficient profitability, with the result that they are unable to provide the level of facilities (e.g. workshops and crew training) which is necessary to maintain the accepted standards of safety. However, the discussion in Chapter 1 indicates stability of market structure in a competitive environment rather than the continual emergence of financially unsound firms. In addition, under the Air Navigation Regulations (ANRs) the inability of an operator to satisfy safety requirements is sufficient grounds for refusing to issue or for suspending an air service licence. Hence financially weak airlines, if considered a threat to air safety, could be readily eliminated through licensing procedures.

Secondly, a firm which finds itself in a situation of falling profits may be tempted to skimp on safety measures by, say, reducing maintenance expenditure or operating in marginal weather conditions. This argument can easily be overstated. Aircraft crew, despite the financial plight of their company, would still be likely to give heavy weight to their own personal safety (though differences in risk aversion between travellers and airline employees are theoretically possible). There may also be relatively little difference in the costs of flying an aircraft safely and flying it at all. Ramsden (1976, p. 37) mentions examples such as meetings of maintenance heads and voluntary incident reporting, and notes that these procedures serve both operating efficiency and safety so that it is difficult to distinguish between the two. Similarly, Edwards (1969, p. 49) recognises that the main safety effort on the part of air operators is 'inseparable from the day-to-day work'. Hence the absolute gain from skimping may be much smaller than is usually presumed.

In addition, the skimping argument ignores some countering competitive forces. Adequate safety is in the firm's own self-interest since, in this simple safe/unsafe scenario, safe operations appear to be a necessary condition for profitability. This implicitly assumes that there are insufficient consumers who would prefer the 'unsafe' service to the 'safe' service in order to make the former operations profitable. Poulton (1963, p. 15) thus claims:

\textsuperscript{82} Hewitt (e.g. 1979a, 1979b) has recently been the most vocal proponent of the view that airline competition is incompatible with maintaining safety standards and discusses some of the mechanisms considered below.
A safe industry is a prerequisite for a stable and profitable industry.\textsuperscript{83}

The adverse effect of a lack of safety on an airline's profits may also derive from market responses more indirect than declining consumer patronage. For example, Ramsden (1976, p. 173) notes that the relative safety of airlines is reflected in insurance premiums for aircraft which may thus vary from 1-3 per cent of their replacement value. Hence in a competitive environment one might expect profitable firms to be a subset of those offering safe services. The profitable airlines will presumably be the ones best able to satisfy consumers' preferences for other service characteristics.

However, while this analysis implies that profitable firms will provide safe services and that unsafe firms will not exist under this simple regime of market competition, it does not necessarily follow that safety will be ensured by providing firms with guaranteed profits through economic regulation of the industry. Although some observers recognise that a viable system composed of financially sound operators can afford to devote resources to air safety,\textsuperscript{84} there is no guarantee that greater attention to safety matters will actually be forthcoming in the absence of direct regulation of safety standards. AAA (1979, p. 7) implicitly agrees with this point when it notes:

\begin{quote}
...a financially stable airline is a potentially safe one
...it can readily afford the highest standards of equipment, engineering and training.
\end{quote}

Thus, under a system of only economic regulation, safe airlines are a subset of those made profitable by such regulation. Ramsden (1976, p. 183) also rejects the argument that air safety is likely to be directly impaired by financial weakness through the methods discussed above. However, he suggests that financial weakness might have an indirect effect through 'subtle corporate incapacitation'. Under this hypothesis a deteriorating commercial performance may lead to a creeping management shambles which degrades the disci-

\begin{footnotes}
\textsuperscript{83} Ramsden (1976, p. 167) agrees with this view:
A safe airline is not necessarily financially sound, but an unsafe airline cannot be.

\textsuperscript{84} E.g. Anderson (1973, p. 18) and Chippindall (1965). Sir D.G. Anderson was Director-General of Civil Aviation, 1936-1973.
\end{footnotes}
pline and morale essential for safety and thus makes the operator vulnerable to accidents. However, Ramsden also notes a lack of statistical evidence to support the hypothesis and the observation of many counter examples where airlines have gone bankrupt without any sacrifice in safety. Furthermore, it would be unlikely that safety would be the only area affected by the alleged management shambles. One might also expect other quality aspects of the declining operator's air service to deteriorate, hence speeding its exit from the industry and minimizing any consumer exposure to the supposed fall in safety standards. Finally, the administration of licensing procedures and other direct controls on operating standards can be expected to ensure that 'subtle corporate incapacitation', like the previous two methods, imposes little threat to consumer safety in a competitive airline market.

While many assessments of Australia's TAP regard our achievements of high safety standards as a benefit of the policy, the existence of such a causal relationship between economic regulation and safety is tenuous. Both Edwards (1969, p. 211) and Ramsden (1976, p. 185), two of the main proponents of a link between economic strength and safety, note that there is little empirical support for this relationship. Observation of the high safety levels achieved in the competitive Californian intrastate market and the explanation of the different safety records of the U.S. domestic airlines in terms of chance fluctuations [Barnett et al (1979)] provide further evidence on this issue. Similarly, Australia's impressive safety record can be more accurately traced to causes other than economic regulation; for instance, the ideal flying conditions due to favourable climate and geography and the strict system of safety and operational controls [Broden (1968, p. 200)]. Ramsden (1976, p. 20) agrees with this assessment. He attributes Australia's safety record to good weather, the general airmindedness of the

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86 This view is supported by Levine (1965, p. 1429), Miller (1975, p. 693) and Keplenger (1976, p. 191).
87 See Corbett (1965, p. 17), Wilson (1962, p. 46) and Hocking and Haddon-Cave (1951, p. 4). Interestingly, Butler (1971, p. 17) disputes this opinion. It might be expected that technological advances would tend to lessen the impact of natural conditions on aviation safety.
country and tough safety standards. He refers to Australia as a 'police state' in its air safety regulation and enforcement.

If the community decides that certain minimum standards of safety are necessary, then direct regulation of operating standards appears a more efficient means of pursuing that objective than a system of economic regulation. However, the argument is sometimes put forward that direct safety regulation is more easily implemented when the industry is also subject to economic regulation (e.g., Chippindall (1965)). The process through which this occurs is usually not explained. Even if the claim is true, it is not necessarily the case that the extra benefit is greater than the possible costs of economic regulation.

It follows from the above discussion that economic regulation of the airlines and considerations of air safety are two distinct issues. Hence the economic deregulation of airline markets would not necessarily prejudice air safety. Indeed, while many writers have called for the removal of market restrictions from the industry, they typically support the retention of direct safety controls and the maintenance of current standards. There has been little questioning of the need for these safety regulations. DOT (1979a, p. 57) notes:

There was no suggestion in any submissions that safety regulatory control in relation to trunk services should be varied and the Committee sees no need to make any changes in this area.

But why is government intervention necessary to ensure adequate safety standards? Why does the market fail to provide the desired standards? A brief discussion might clarify some of the essential issues in this highly emotive area.

88 A system of direct regulation of safety standards is itself not costless; hence these costs must be weighed against the benefits. The economic nature of air safety is discussed further below.

89 A rare exception is BTE (1978, p. 59):

Certainly, there is scope for conjecture as to whether existing safety standards may be too rigid in an economic sense (and it could be that they may be counter-productive in some instances).
Towards an economic analysis of air safety

There is no reason why air safety cannot be considered an economic good: while consumers positively value higher levels of safety, it also costs extra resources to produce. Hence, as with all economic goods, there will be an optimal level of safety, a level beyond which consumers judge the extra safety to be gained not to be worth the cost in terms of the value of alternatives foregone. If this were not so and if the ultimate objective were safety 'at all costs' or 'at the highest possible level', the obvious policy solution would be to ban civil aviation. The apparent absurdity of this policy prescription merely reflects the inappropriateness of attempting to pursue such narrow goals.

The economic nature of air safety is illustrated by many examples in which safety is compromised by other economic considerations. The system of permissible unserviceabilities enables operators to correct some defects at a more convenient time and place. Ramsden (1976, p. 75) notes that passenger survivability of airline crashes could be expected to increase with the introduction of upper-body seat belt restraints or rearward-facing seats. However, consumer acceptability is a major influence preventing the introduction of such safety measures (especially for the latter innovation which appears to have minimal cost implications). In Australia most commuter operations are conducted under an exemption from the need to satisfy the usual technical standards relating to scheduled air services. The reduced safety standards implicit in these exemptions effectively lowers the costs of operation and increases the economic viability of such services. Another example is the F27 service of EWA to Norfolk Island from Sydney. Since February 1977 this service has been operated under a concession from the accepted safety standard for overwater operation by a twin-engined aircraft, namely, that in the event of engine failure, it must not be more than 90 minutes normal cruising from a suitable aerodrome. The EWA service exceeds this maximum by about 15 minutes.

Recognition of the economic nature of safety illustrates the misleading approach of categorising air services as 'safe' or 'unsafe'. There exists a broad spectrum of safety standards, ranging from high to low in terms of the probability of suffering injury or damage. In addition, different consumers with different budgets, tastes and attitudes to risk would be expected to prefer to purchase different amounts of
air safety.\(^9\) Hence without safety regulation one would expect to observe different operators offering different safety standards to satisfy the different groups of consumers. It follows that a system of direct safety regulation which truncates the distribution of available safety choices by setting minimum standards does not necessarily have any a priori merit.

Nixon (1978, p. 13) leaves little doubt that considerations of the public interest are not the main concern when determining safety requirements:

\[\text{... the general aviation industry must realise that while aircraft accidents continue to occur, there will be public demand for more and more regulation, irrespective of the merit of such regulations.}\]

Further doubts on the desirability of safety control come from the suspicion that such legislation is a possible means of extracting economic rent from the market. Safety standards are not created in a vacuum but rather derive from the interaction between the bureaucracy, airlines, airline employees and consumers, each group with a different degree of influence. Higher standards may in fact be a convenient means of increasing job opportunities and rewards for airline employees or of giving bureaucrats greater power and prestige. An example is the relatively high standards relating to aircraft evacuation which sometimes require Australian airlines to carry more cabin crew than overseas operators [see ATI (1980, p. 13)]. Many Australian standards are recognised as amongst the strictest in the world. Similarly, Hewitt (1979a, p. 4) warns of the threat to air safety which would occur if airline management were subjected to the same financial pressures as the 'harried' garment industry. However, it should be noted that a central feature of his strategy to ensure air safety involves the lessening of market pressures and disciplines facing airline executives.

In addition to these doubts on the standards which have been adopted in the past, one should also be aware of the various economic responses to the introduction of compulsory minimum standards. These responses may limit the capability of policy to achieve public interest goals. For

\(^9\) This should come as no surprise; not everyone chooses to buy the 'dynamic safety' of a Volvo, or to use a car instead of a motor bike, or not to play body contact sports, etc.
example, stricter air safety standards may, by increasing the cost of air travel, induce consumers to switch to other modes of transport (e.g. private cars) which may have higher safety risks. Thus the value of the reduced risk to continuing air travellers must be offset by the exposure of previous air passengers to the lower safety of the chosen alternative mode of transport. A priori, it is not clear that the community will necessarily enjoy net gains from the increased air safety standards.

Any economic justification for government involvement in the determination of safety standards lies in the existence of externalities or market failure. The most likely source lies in the provision of information on the safety standards of individual operators. Other possible sources of market failure include safety spillover effects (a poor safety performance of one operator may generate a lack of confidence in the air system as a whole [e.g. Edwards (1969, p. 10)]) and the danger from air accidents to residents (though this danger could be reflected in housing prices and hence be implicitly accepted by consumer decisions on residential location). Both of these potential sources of market failure also seem closely related to the provision of consumer information. The above discussion implicitly assumes that the consumer possesses the necessary information regarding safety to make his rational decision. Thus, when the debate turns to the question of skimping on safety, the real worry is not the skimping per se but rather the likelihood that the consumer will be ignorant of such actions and hence might be purchasing a product which is not what he thought it to be. However, the most appropriate role for government in these circumstances appears to be to directly correct the informational deficiencies, by perhaps instituting a system of voluntary certification of services and allowing fair advertising of these product characteristics as an alternative approach to the setting of compulsory minimum standards or economic market control.

Relevant to the question of advertising air services is the observation that safety has traditionally been "that most taboo of airline subjects" [Hewitt (1979a, p.4)]. This situation is unsatisfactory when the issue is frequently used by advocates of economic regulation of airline markets. One hypothesis of the reluctance to discuss the safety performances of different airlines might be that, after allowing for various special factors (e.g. climate, terrain, average stage length and aircraft type), differences in air accident statistics may be chiefly determined by chance. A reticence to
discuss the special factors influencing an airline's safety performance can be contrasted with the numerous reasons which are advanced to explain differences in economic performance [see Chapter 6].

Summary

This chapter's discussion on safety and economic regulation of airlines can be neatly summarised by the following:

Arguments about safety standards and safety records are not relevant in this regard. Safety standards can and do coincide with lower fares and more competition between airlines. After all, the maintenance of safety standards is one of the most effective ways of competing. The safety issue is simply a bogey which is trotted out to frighten the naive whenever the airline monopolies are under threat.  

Some Social Objectives

Defence

It is not surprising that the air transport industry is closely associated with national defence considerations. The first major application of aircraft was for military purposes and subsequent conflicts provided further stimulus to civil aviation through technological advances, the availability of trained personnel and by boosting the demand for air services. From its earliest years, not only did many operators and bureaucrats have military flying backgrounds [see Goodrich (1960, Ch. 1)], but also, as Butler (1971, p. 31) reports, no person could be employed as a pilot, ground engineer, navigator or wireless operator unless he agreed to serve in the RAAF reserve. Chippindall (1965) warns not to overlook the importance of the airline industry for a future war emergency. Thus, when discussing aviation policy:

Defence considerations must also be taken into account here, bringing with them the need for continuing large Government role for aviation in Australia.92

While the defence role of military aircraft is obvious, the corresponding role for civil air operators is less so. Although the planes of these operators can be and have been pressed into military services, it is generally agreed that the chief value of airline operators in a defence emergency lies in the effective performance of civil aviation tasks. Goodrich (1960, p. 71) recognises this point:

It may be agreed that it is important for national defence for Australia to have a large and efficient domestic and international air transport system... Civil aviation undoubtedly has an emergency trans-

portation role for troop movement, civil evacuation and the like, but it should not be regarded as a cut-rate method of obtaining and maintaining transport aircraft and personnel for the Air Force to take over when hostilities commence. Civil air transport has its own vital contribution to make by providing efficient speedy transport for a nation at war.

Chippindall (1965) also stresses the extra demands placed on the air transport sector to perform civilian air services during an emergency situation.

Civil aviation, like many other industries, undoubtedly becomes more important in times of war since the demand for air services increases greatly. But, increases in demand also occur during peacetime, though perhaps less dramatically. It seems then, that the most appropriate policy, in order to satisfy the actual and potential demands placed on the industry, is to provide the necessary infrastructure and to encourage the growth of the most efficient operators. One would expect an economically efficient industry to be more capable of showing the flexibility and innovation necessary to cope with a rapidly changing wartime economy.

One of the stated aims of the Civil Aviation Agreement Act 1952 is 'to assist the defence of the Commonwealth'. However, it is unlikely that the TAP is the most effective means of achieving civil aviation defence goals. McMahon argues that an adequate defence potential can be maintained 'by the continued existence of the 2 main airline operators'. Others stress the dangers of competition to Australia's defence:

Air transport is too vital to Australia's economic progress and defence security for it to be open to the risk of having its scope and efficiency impaired by a wasteful rat-race between uncontrolled private competitors.

However, the discussion in Chapter 1 indicates that competition will not destroy the airline industry's ability to satisfy consumer demand and hence its defence capability. McManus emphasises the duplication of facilities under the

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93 *Hansard, HR*, 30 October 1952, p. 3979. McMahon was then Minister for the Navy and Minister for Air and subsequently Prime Minister, 1971-72.
TAP and the availability of additional trained staff. Given the discussion on economies of scale in Chapter 2 this effect is likely to be insignificant. A further defence advantage often attributed to government involvement in air transport is the co-ordination of civil and military aviation policies. This was one of the reasons offered by Drakeford to support the ALP's attempted nationalisation of the airline industry. Such co-ordination is supported by Australian Transport (1977, p. 17):

> Although the costs of the civil transport structure should be obtained from outside the defence vote, there is a need for all transport developments to be examined by defence with a view to providing extra fitments, ... etc. in order to make the unit of transport, or the infrastructure, more readily convertible to defence needs. Such additions should be funded through the Defence Department.

In reality there is little such co-ordination under the TAP; The Canberra Times, 1 August 1979 reports the Secretary of Defence and the Chief of Defence Force Staff to claim that the domestic airlines do not consult with defence authorities when purchasing new equipment. Finally, to the extent that the current operators are not efficient [see Chapter 6], then the TAP seems to be detrimental to Australia's defence.

**National development**

Many observers stress the role which air transport plays in the national development of the country. Chippindall claims:

> Aviation ... is in my view of such enormous importance to the development of our country that the Government must always have a direct role in the control and development of the industry.

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95 Hansard, S, 20 November 1957, p. 1397. Cole, Hansard, S, 1 October 1958, p. 778 takes this argument to its limit by claiming that 'the more airlines we have the safer we may feel'!

96 Hansard, HR, 18 July 1945, p. 4184.

TAA argues that the ability of domestic airlines to direct traffic to certain areas often provides a stable influence which attracts investment. Hence it claims:

The domestic airlines have made and are continuing to make a substantial contribution to regional development and decentralisation.  

However, it is unlikely that the direction of causation is so simple; i.e. do airline services enable the development of new regions or vice versa? Edwards (1969, p. 183) admits that there is almost no empirical evidence to support the former proposition. On this point one might also note the expansion, especially in Western Australia, of demand for and thence supply of air services which has been associated with the recent development of resource projects. Holt (Prime Minister, 1966-1967) attributes the benefits more directly to the TAP, through which

We have fostered the development of outback services, and in this way, assisted national development in remote areas.

However, once more it appears that the attainment of any chosen national development objectives is quite independent of the existence of the TAP. Such goals, if desired, can readily be subsidised through the cost recovery program (as the airlines and others demand it should be) and

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98 Hansard, SCT, 8 February 1977, p. 687.
99 Hansard, HR, 9 April 1957, p. 628.
100 The Commonwealth Government is largely responsible for the provision of airports and airways facilities. Part of the costs of these services are recovered from the aviation industry through its system of Air Navigation Charges (ANCs).
101 E.g. Ansett (1972, p. 39) and Australian Federation of Travel Agents (AFTA), Hansard, SCT, 29 June 1977, p. 2241. However, DOT (1979e, p. 162) is unconvinced of the desirability of subsidising civil aviation on either defence or national development grounds. It argues that many industries and individuals play important roles in these fields and that there do not appear to be any cogent reasons why aviation should be given special treatment.

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through direct subsidy payments for specific air routes, without the need for restricted market entry. A preferable approach to national development goals is to adopt a policy producing the most efficient operators and encouraging the growth of developmental routes by direct subsidies through, say, a system of competitive tendering. A tendering system for allocating Government air subsidies was used during the 1920s and 1930s, although the choice of operator was not always based on the lowest tender (Goodrich (1960, Part I)). DOT (1979a, p. 192) recommends granting air transport assistance to communities through the provision of explicit subsidies in the form of contracts to supply specified services. Such contracts would be awarded for a relatively short term with the operator selected by a process of competitive bidding.

Fuel conservation

Even the popular issue of fuel conservation has recently entered the air debate. It has been argued that with increasing costs of fuel a monopoly airline would be more efficient than the present Two-Airline system, while Hewitt (1979b, p. 11) predicts that deregulation will not be tolerated in an energy-conscious world.

Elementary economic principles again suggest that it is unwise to pursue such a narrow goal as fuel conservation. Empty seats are not necessarily a waste but reflect a higher quality of service through more frequent flights, and the consumer may be willing to pay for this level of quality. Furthermore, the discussion in Chapter 1 suggests that competitive market forces will act to satisfy consumer preferences and to successfully adjust output and product characteristics to any changing market parameters, e.g. fuel prices. If fuel conservation is considered a problem, the first policy requirement is an economically sensible strategy for pricing fuel, not detailed regulation of industries using fuel as an input.

102 The practice of encouraging a greater geographic spread of services through cross-subsidisation methods is criticised in Chapter 1.
103 The Canberra Times, 11 October 1979. Similarly, Thayer (1977, p. 684) considers fuel conservation to be the new rationale for 'some kind of global public utility system'.
Free enterprise values

Mention should also be made of another set of social objectives: those associated with free market or private enterprise values. The value of individual decision making and freedom of choice and action as well as the values of not having businessmen dependent on grants of privilege . . . with its attendant risks of mutual corruption of both the political and economic processes [Kahn (1971, p. 246)] are highly regarded by some. For example, AFTA remarks:

It is believed that this policy has created a cartel and is contrary to the public interest as well as being out of place in a free enterprise society. 104

To the extent that such values exist, economic regulation of the airline industry imposes additional costs on the community.105

A special industry

A notable feature of the Australian airline regulation debate is the regard by many of aviation as such a special industry that government involvement is mandatory. Hewitt (1979a, p. 5) considers the proposal that the airline industry is no different, and hence should be treated no differently, to other industries to be 'a fallacious and dangerous point of view'. Drakeford argues:

... aviation is intensely vital today as a national instrument, and that inevitably it is a part of the very core of the economic, social, diplomatic and defence policy of the nation.106

104 Hansard, SCT, 29 June 1977, p. 2237.
105 This must be weighed against the benefits to those people who genuinely value regulatory processes as an allocative mechanism.
106 Hansard, HR, 18 July 1945, p. 4179.
In a similar vein it is argued that civil aviation has

a value away and beyond what it costs to operate in dollars and cents.\(^{107}\)

and that

the so-called vested interest in air transport, far from being confined to the travelling public, belongs to the entire community.\(^{108}\)

While airlines undoubtedly perform a valuable task, so, by definition, does any firm which sells a product in the market place. Unless there is a marginal benefit or cost which is not reflected in the price of the service (as the previous two quotations assert), there seems little need for government involvement. A common theme throughout this chapter is that the social objectives most frequently raised in the context of civil aviation can be addressed independently of restrictive economic regulation of the industry. Furthermore, to the extent that the current regulatory policy leads to economic inefficiency in the airline industry, the pursuit of such goals is likely to be hindered. Finally, one suspects that the significance of these external effects can often be exaggerated and that hence the operation of airline services is largely a private good in nature:

The argument has been advanced that aviation provides a social service and therefore should be subsidised. This view is not acceptable. There are better ways of providing social services than through heavily subsidising aviation . . . Air transport is clearly an economic service and, as such, there should be the requirement that the user or beneficiary meet the cost of the services provided. [Jones (1975, p. 18)]

\(^{107}\) Captain R. Holt (President of the Australian Federation of Air Pilots), Aircraft, May 1977, p. 10.

\(^{108}\) Drakeford, Hansard, HR, 18 July 1945, p. 4181.
The Two-Airline Policy: Past and Future

Any judgement of the success or otherwise of the current regulatory framework, the need for policy reform and the choice among the various policy prescriptions must be based on a sound assessment of the industry's economic performance. While there may be disagreement about this performance, there can be little doubt that it is largely due to the system of regulation adopted for the industry [see Appendix I]. This chapter surveys the airline industry's performance under the TAP and examines some of the proposed options for future aviation policy.

I. THE NEED FOR POLICY REFORM

A favourable viewpoint

Many observers consider the TAP to be successful, producing a number of desirable results for the community. This is not only the opinion of the two major operators; several politicians, bureaucrats and others offer the same view. Perhaps Cotton presents the most glowing account of Australian airline regulation:

I think it has been acknowledged by all people that the 2-airline policy has played a major role in Australia's development and has maintained stability ... the airlines have achieved a high standard of service ... The 2-airline system is the envy of many

111 E.g. DOT, Hansard, SCT, 21 March 1977, p. 1125.
countries . . . I think it is one of the most admirable regulatory air transport systems in the world . . . I think the system has demonstrated that it stands alone in its ability to provide the Australian public with what is undoubtedly one of the safest and most efficient air services in the world, and whose fares are as low as any in the world when one considers all the factors involved. 113

The discussion contained in previous chapters indicates that many of the desirable features currently available in the industry (e.g. safety, reliability, stability and modern equipment) would not necessarily disappear in the absence of the TAP. A further worrying aspect of the favourable viewpoint is the frequent use of excessively narrow assessment criteria. For instance, Chippindall (1965) draws attention to the growth in passenger traffic over time as evidence of the success of the TAP and of public satisfaction with the policy. A more relevant consideration is the growth likely to have occurred over that same time period if a different regulatory system had been adopted. Similarly, Watkins (1963) judges that the TAP is effective as the major operators share such a large proportion of the domestic market. A common shortcoming is to assess the TAP solely with respect to its impact on the airline operators (e.g. their stability and viability) with little consideration given to its effect on consumers.

The recent economic critique

While the TAP has attracted criticism throughout its history, the late 1970s saw a renewal and consolidation of dissatisfaction with the policy, particularly in the form of more rigorous economic analyses of the system. 114 This research was undoubtedly stimulated by advances, occurring mainly in the U.S., in the theoretical and empirical knowledge of economic regulation in general and of airline economics in particular.

It is generally acknowledged that the Australian domestic airline industry has been characterised by a lack of substantial competition. When the TAP was first introduced

113 Hansard, S, 26 October 1972, p. 2301.
114 E.g. Forsyth and Hocking (1978), BTE (1978), Kirby (1979), Forsyth (1979) and DOT (1979b), particularly the appendixes of Mackay, Hocking and Gannon.
Evatt noted:

This proposed rationalisation scheme is the very antithesis of active and competitive air services... In fact, for all practical purposes, the agreement will put an end to real competition...115

The regulatory system gives the airlines not only the opportunity but also the encouragement to reach mutually acceptable agreements, i.e. to collude. When outbreaks of competitive behaviour have occurred, they have largely been confined to peripheral areas such as food and drinks, staff appearance and uniforms and exaggerated advertising claims. The recent self-dubbing of AAA as 'the competitive one' might fall into this last category, although some observers could consider the slogan to be more a case of misleading advertising! Some of the most active competitive battles have been fought in the courts and in the Rationalisation procedures of the TAP.

For an example of this last point consider the saga of TAA's DC9 service on the Perth/Port Hedland/Darwin route.116 TAA was granted a licence to operate this service in February 1974. ATI undoubtedly expected such a service to have an adverse effect on its regional airline, MacRobertson Miller Airline Services, which already operated over the same route with F28 aircraft. Unable to reach an acceptable agreement with TAA on this matter, ATI referred the dispute to the Rationalisation Committee in March 1974. Since the two airlines were still unable to agree, the Co-ordinator decided in April that TAA should be given access to a weekly service on the route. Dissatisfied with this decision ATI appealed to the Arbitrator who in June reaffirmed the Co-ordinator's decision. Having for the time being exhausted the Rationalisation process, ATI resorted to the legal system, arguing before the High Court in June 1974 that it was not valid under the Australian Constitution for TAA to offer intrastate services on the Perth/Port Hedland segment of the route. Apparently growing tired of these delays TAA indicated in August its intention to introduce the service while awaiting the High Court ruling; injunctions issued by the Victorian Supreme Court prevented this action. In December 1976 the High Court ruled in favour of the proposed TAA service. Following further procedural

115 Hansard, HR, 29 October 1952, p. 3877.
manoeuvres the Arbitrator resolved some outstanding matters regarding timetables and fares in October 1977. TAA was able to commence operations 'at long last' in November 1977. Aircraft (November 1977, p. 12) estimates that the delay to TAA was worth $1m annually to ATI.

A counter-argument has been presented which claims that the industry has, in fact, enjoyed vigorous competition which has resulted in a satisfactory economic performance by the airlines and which explains the similar prices and services observed in the industry. Airline operators and regulators both place heavy emphasis on the extra revenue which results from a favourable one per cent market swing and claim that this provides a competitive spur. However, since the regulatory framework effectively limits the scope for gaining increased market shares and is directed towards ensuring that both operators remain viable and perform comparably, this spur is not likely to be particularly sharp.

The capacity determination procedures of the TAP, which control the total aircraft capacity available and which provide for each operator to offer half of this total, have a strong influence on the market shares of the two operators. However, it is not clear exactly to what extent these controls limit the attainable market share of competitive route traffic. Freeland (1977, p. 7) claims the range is 48-52 per cent of the market; AFCO (1978) suggests the airlines can compete for only 10 per cent of the market. If the load factor were 65 per cent on all flights on all routes and total demand remained unchanged, the market share which is physically possible ranges from 23 to 77 per cent. However, the economically possible market share will reflect the decreased attractiveness of an airline when it has higher load factors, and hence will generally be substantially less (especially when all the other important service characteristics are identical). Six-monthly data for the five years to the end of 1978 reveal that TAA's share of competitive route passenger traffic has varied within the range of 48.8-51.1 per cent.

In a regulatory environment which is directed towards ensuring the stability and viability of the existing operators and which effectively limits the ability of each to make significant market gains at the expense of its competitor, the

118 See Chippindall (1965), Ansett (1965) and Freeland, Hansard, SCT, 17 August 1978, p. 5592.
119 Data from DOT, Annual Report, various years.
Airlines may prefer to accept the 'quiet life'. Within the current regulatory framework such a reaction need not even be confined to only tacit collusion. A lack of real competition in the airline industry is alleged to have resulted in both allocative and technical inefficiencies.

Allocative efficiency

The TAP provides little incentive or opportunity to innovate. Rationalisation procedures form an obstacle to innovative attempts to expand the market size and to increase an operator's market share. Kahn (1979, p. 8) likens this sort of regulatory process to 'a patent system in reverse': unlike the patent system which rewards an innovator for the public disclosure of his new idea, rationalisation either forces the innovator to share the benefits with the other airline or enables its competitor to block the opportunity to test it in the market. By effectively reducing the expected return from the development of innovative air services, the current regulatory system is likely to lessen the amount of resources that the airlines devote to such activities. Similarly, an average cost pricing rule discourages the airlines from offering services which involve a greater degree of risk than that implicitly contained in the allowed rate of return. In addition, rigid application of a 65 per cent load factor when determining capacity means that any innovative attempts such as discounting to attract more travellers are self-defeating; average load factors are held constant and revenue is diluted. See Hocking (1979b, p. 95). However, this last problem has recently eased to some extent: standby passengers are not counted for capacity determination purposes thus enabling average load factors to rise.

Allocative inefficiency is reflected in the absence of discounting and the small variety of price/quality choices available to the public. DOT (1979a) concludes that the overall level of fare discounting in Australia exceeded only that of the Third World domestic airlines, that this indicated a failure to adequately satisfy consumer preferences, and that significant efficiency gains would result from a wider range of combinations of prices and qualities of service. Forsyth (1979, p. 68) regards the lack of price/quality variety as 'arguably the single most important objection to the Two Airlines Policy'.
Technical efficiency

Possibly even more damning to the TAP is the claim that the airlines are technically inefficient. This hypothesis is ultimately based on the elementary proposition that an industry is likely to be less productive if it is organised as a closed market rather than as an open market. One imagines that the longer the market closure and the less the inter-firm rivalry within the closed group, the greater will be the likelihood of technical inefficiency. This technical inefficiency is effected through the system of cost-plus pricing of airline services. The empirical evidence offered to support this hypothesis consists of fare comparisons among world airlines, partial productivity analyses [e.g. Forsyth and Hocking (1978)] and regression cost models [Mackay (1979)].

This evidence is not accepted unanimously. For instance, figures are often quoted to show that Australian air fares have fallen in real terms, that changes in air fares compare favourably with changes in other consumer prices, and that air travel is now less expensive in terms of wage earnings [e.g. AAA (1979a) and TAA (1978)]. Such observations, while perhaps interesting, are of little value for assessing airline performance. They are more appropriate as indicators of movements in relative prices or living standards. The crucial test is to compare actual fares and costs today with their potential today under a different regulatory framework.

However, direct fare comparisons and partial productivity analyses are open to the valid criticism that they fail to consider the different operating environments of the various airlines which are being compared (e.g. input prices, scale effects, route density and average stage length). These special factors need to be considered carefully. For instance, the domestic airline operators frequently cite the relatively high fuel tax they pay compared to overseas operators. But, since these payments are attributable revenue for cost recovery purposes, it is the Government's cost recovery program rather than the fuel tax itself which influences airline costs. If the airlines did not pay fuel tax they would pay higher Air Navigation Charges. Thus, within the context of an unchanged cost recovery objective (the most sensible ceteris paribus assumption), the fuel tax issue is largely irrelevant to airline costs. Similarly, the impact on costs of higher input prices and technical flying standards

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should not necessarily be accepted at face value. These are determined within the regulatory environment and so may be partly influenced by that regulation. For example, unions may be able to secure higher wages in a regulatory framework which involves cost-plus pricing.

This issue of 'regulation exploitation' is discussed by Forsyth and Hocking (1978, p. 13) and mentioned in Chapter 4 in the context of safety standards. However, ATI (1980, p. 29) denies the possibility of such exploitation, arguing that the profit motive mitigates against it and that the demands of Australian industrial unions would not be particularly affected by the industry's viability or its price setting methods. It has already been noted that in the current regulatory environment the role of the profit motive is significantly muted and hence offers less protection from technical inefficiency than it does in a competitive market setting. Kirby (1979, p. 108) argues that, because of pressures to avoid the visibility of supernormal profits, raising the cost structure is one of the few means within the TAP framework by which the major operators are able to capture some of the monopoly rents which are potentially available from the entry restrictions. In addition, it seems implausible to suggest that the tenacity with which union demands are pursued is not affected by the reduced incentives of management to resist such claims.

To further support its case ATI (1980, p. 49) cites the refusal of the operators to allow three-man crews of DC9 aircraft in the mid 1960s. However, since most other world airlines, the U.S. authorities and DCA firmly supported two-man crews, the major Australian operators could hardly have been in a stronger bargaining position, nor would their submission on this issue have been more obviously out of step with overseas practice and costs. A counter example to the DC9 case is provided by The Canberra Times, Editorial, 24 March 1980 which notes that, following industrial unrest due to amendments to Victorian workers' compensation legislation which limited the liability of employers, Ansett was one of the first companies to announce an agreement with the Victorian Trades Hall Council which provided that its workers would receive the same benefits as provided under the old legislation. The Editorial remarks:

It would be harder to imagine a more dramatic demonstration of the costs that protected and

121 See DOT, Annual Report, 1967/68 for further details.
uncompetitive industries can impose on the rest of the economy.

The regression model approach of Mackay (1979) attempts to allow for the effects of various exogenous influences on airline costs. He estimates that appropriate changes in the organisation of domestic air services might reduce average costs of production by as much as 35 per cent. Using this estimate Kirby (1979, p. 114) determines an upper bound for the welfare loss imposed on the community through technical inefficiency to be of the order of $250m in 1976/77, or approximately 50 per cent of gross industry revenue.

This regression technique must be acknowledged to be imperfect, just as any attempted price justification procedure within the regulatory framework must also be. This stems from the difficult nature of the problem: the need to compare the actual performance of the industry with its potential. The most accurate test of the airlines’ current performance is likely to be achieved only with open market conditions where other operators have the chance to demonstrate superior efficiency. Edwards (1969, p. 120) admits that regulatory devices such as efficiency audits and direct interference can never be as effective a spur to efficiency as the prospect of losing business to competitors.

Summary

It is clear that recent theoretical and empirical economic research has thrown an unfavourable light on Australia’s TAP. The prevailing judgement of independent observers can be represented by the following:

There is little doubt the two-airline policy as it operates now is strongly inimical to competition, cheaper airfares, and cost efficiency in both the major airlines.\footnote{DOT (1979a) is critical of the regression technique and is reluctant to accept its findings. See Kirby (1980b) for a rejection of its criticisms and further discussion. Australian Financial Review, Editorial, 11 January 1979.}
II. SOME POLICY OPTIONS

No change

Several arguments can be advanced to suggest that there is no need to alter Australia's air transport policies. Firstly, it might be claimed that the TAP has worked well, producing favourable results and revealing few shortcomings. It is in this vein that Chippindall (1965) concludes:

... any change at this juncture, even if it were practicable, would not be in the interests of the Australian people.

The discussion of the previous section indicates that this rationale for maintaining the current system is suspect.

A related argument stresses the allegedly 'theoretical' nature of much of the criticism of the TAP. Thus AAA (1979, p. 2) complains of 'nebulous suggestions of lower fares, improved services and superior timetables' and the lack of 'concrete methods by which these aims could be achieved'. Similarly, McKenzie (then General Manager of TAA) is unimpressed with 'classroom research' which is critical of the domestic airline system. If such objections are to have any substance one needs to demonstrate the failure of economic theory in general (e.g. the attempt of Thayer (1977)) or its incorrect application to the airline industry. Yet the evidence indicates that economic analysis of civil aviation has successfully offered many insights into the airline industry and the effects of its regulation. Furthermore, the arguments for changing the current patterns of economic regulation are not confined to the world of theory. In particular, the U.S. deregulation experience provides important new empirical evidence to support the case for an increased reliance on competitive market forces. For example, Australian Financial Review, 20 February 1980 reports Meyer (president of Trans World Airlines) to note that U.S. deregulation has done for the airlines exactly what some economists predicted; forced the industry to become more innovative and efficient through competition.

An 'enlightened' approach

Several observers of Australia's domestic airline industry have proposed recommendations for policy reform which are based on perceived inefficiencies in the TAP and seek to overcome these deficiencies. One broad class of such reform is the notion of an 'enlightened' TAP. This approach, while recognising current shortcomings, assumes that better administration of the industry within the basic TAP framework (most importantly, continued restricted entry) can achieve increased economic efficiency. The modified policy typically seeks to encourage more competition within the TAP (e.g. by eliminating the more blatant collusive features such as the Rationalisation Committee), to introduce more effective regulatory scrutiny of the airlines (e.g. public fare inquiries and tighter cost examination), and to offer increased attention to consumer interests (e.g. by establishing an airline users committee or conducting passenger surveys).

Unfortunately one cannot be very optimistic about the likely success of this approach in achieving significant gains in economic efficiency. Since an 'enlightened' TAP does not appear to significantly change either the incentives facing the main groups of participants in the regulatory process or their relative powers of influence, it is doubtful that this policy response will yield the substantial efficiency gains which are potentially available.

The moves to encourage competition, while increasing the costs of collusion and enhancing the ability of the airlines to compete, appear to have only a marginal impact on their incentives to do so. Thus, with little threat of outside entry, a probable scenario is lengthy periods of tacit collusion interrupted by brief flurries of more visible rivalry, e.g. food and drink wars. Even when such competitive activities

125 DOT (1979a) is the most notable example of this approach. For a critical examination of this document see Kirby (1980b). An 'enlightened' TAP also appears to be the basis of ALP domestic civil aviation policy [see Morris (1980a)] and of the Government's recently announced policy initiatives [see DOT (1980a)].

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occur, consumers will still be denied access to potentially lower cost firms (as will be the case if the airlines are currently operating from a technically inefficient base), as well as being limited to the innovative ideas of only the existing operators. The fundamental problem is to stimulate innovation and to ensure real competition; tinkering with the present system does not appear to be the solution. As Brodgen (1968, p. 200) notes:

A modicum of competition might be achieved by some adjustment of the controls to permit some greater degree of decision by the individual airline within the two-airline policy.

The idea that the policy modifications will enable regulators to be more effective presupposes that something is presently hindering their attainment of public interest goals. Tighter controls of costs and fares, while easy to recommend, are inherently difficult to achieve. For example, Forysth and Hocking (1978, p. 31) outline the informational requirements necessary for an idealised system of adjusting air fares. These requirements are so demanding that the prospects of achieving such an efficient regulatory pricing system are negligible. However, calls for public scrutiny of the regulatory process implicitly suggest that the major difficulty is a lack of incentive on the part of the regulators rather than any significant lack of ability. Morris (1980a, p. 5) complains that regulatory decisions are determined by a 'private club of industry operators and departmental bureaucrats'. He asserts:

... the only effective way to ensure the public interest is protected ... is by way of a public inquiry.126

Finally, most consumers are likely to gain little from surveys and institutional systems of consumer representation. What matters most is not what consumers say but rather how they vote with their purchases of airline tickets. A major danger with an institutional approach is that it may merely create another effective minority lobby group which is capable of further exploiting the general community through any revised patterns of regulation. In this regard consider the large number of special interest groups who have

126 Morris, Hansard, HR, 28 February 1978, p. 252.
recently been pleading their cases for air transport subsidies to the Independent Public Inquiry into Domestic Air Fares.

**An X-Airline Policy**

A third policy option which is frequently suggested involves replacing the TAP with an X-Airline Policy, where X is usually specified to equal one or three. Monopoly airline advocates stress the economies of scale, economies of aircraft size and scheduling advantages which a single operator could achieve. However, these advantages could be more than offset by the even further reduction in competition and incentive to innovate that this system would entail. In contrast a Three-Airline Policy aims to increase competition in the industry, thus reaping efficiency benefits [e.g. see AFTA (1977, p. 7)]. However, with no threat of further entry the outcome, apart from a possible decline in the incidence of parallel scheduling, may be little different to the present situation. The three operators will face similar incentives to those of the original two, and so there may be little increase in competitive activities. An X-Airline Policy, by interpreting competition in terms of market concentration, offers no guarantee of determining the extent of competitive forces in the industry and hence exerts only a weak influence on economic efficiency.

**Deregulation**

Several of the policy responses discussed above seem to be based on the premise that an increase in competition in the airline industry would have a favourable impact on economic efficiency. Yet these modifications of existing policy fall well short of achieving the potential efficiency gains. It is increasingly clear that freedom of entry into the industry is the crucial issue of policy reform. Levine (1975, p. 648) notes that ease of entry is more important as a factor in fare competition than even pricing freedom and observes that most examples of price competition and marketing innovations have occurred when entirely new airline firms enter the market. The discussion in previous chapters indicates that open market competition is feasible in the airline

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127 As noted in Chapter 2 this proposal has a long history of support, starting with the Corbett Committee and most recently advocated by Richardson [see *The Canberra Times*, 11 October 1979] and Brogden (1980).
industry; empirical observation supports this assessment. Relaxation of the only significant entry barrier, the Government's regulatory policy, offers the greatest possibility of a significant improvement in the industry's economic performance. The open market solution provides both the necessary incentive to stimulate management and the most decisive test of their entrepreneurial abilities. Consumers need fear little in a deregulated airline environment; it is the inefficient airline operator who stands most to lose.

The adjustment process

One aspect of the deregulation option which needs further comment is the so-called 'adjustment process'. Some authors are concerned with the possible costs of adjustment which might follow an abrupt deregulation of the industry. BTE (1978, p. 53) thus urges:

Whatever the regulatory changes need to be, they should be instituted on a gradual basis. Limited experimentation with reformed legislation should be given serious consideration before final decisions are made...

Similarly, Forsyth and Hocking (1978, p. 26) recommend:

... judicious shifts away from the present system, not ... a sudden complete change.

Adjustment costs may be borne by both consumers (e.g. disrupted services) and producers (e.g. adapting the firm to changing market conditions). It is hoped that a phasing-in of policy reform would enable existing operators to increase efficiency and reorient their managerial goals so that they can cope more adequately with the new competitive environment. At the same time the potential for disruptions to services may be lessened.

However, these adjustment costs should not be exaggerated. 'Improved', rather than 'disrupted', may be a more accurate description of the changes in air services which are offered to the majority of consumers. Similarly, the alleged costs to the firm due to the traumatic competitive experience may merely be wealth losses suffered from declining consumer patronage. Demory (1975) argues that the adjustment costs are likely to be small because of the competitive
nature of the industry. It was noted in Chapter 1 that the nature of the fixed capital assets of airline operators implied that there were few substantial barriers to entry and exit. Hence the adjustment costs of changing a firm's scale of operations were relatively small. In these circumstances the adjustment costs rationale for a gradual introduction of policy reform may largely reduce to considerations of equity rather than efficiency, i.e. that the beneficiaries of existing policies should not bear most of the burden of changing to a new regulatory framework which is designed to increase economic efficiency.

There may be offsetting dangers in lengthening the period of policy change. A sudden break may be necessary to ensure that the policy reform actually occurs; gradualism may merely represent an attempt to stall the initiatives or to entrench the positions of existing operators. A phasing-in of new policy also presents the authorities with a further regulatory task. Since the policy reform is desired to overcome the inefficiencies produced under the current system, one must be sceptical of the ability of these same regulators to maximise economic efficiency through their discretionary introduction of the new policies. Observation of U.S. deregulation indicates that the inflexibilities, which are inevitably present with a tight system of removal of economic controls (regulated deregulation!), can also have an adverse effect on the industry. Many U.S. airlines have urged more rapid deregulation of the industry. Recent financial difficulties of some airlines have been blamed on their inability, due to regulatory procedures, to adjust rapidly to higher oil prices. Finally, a process of gradual deregulation appears to offer the greatest prospect of predatory pricing in the airline industry. An existing carrier might be able to offset its losses in a deregulated market segment with the profits earned in those still subject to entry restrictions. This possibility needs to be considered in connection with the 'Bizjets incident' and the deregulation of air freight which was recommended by DOT (1979a, p. 118) and which is part of the Government's announced policy initiatives.

From May 1979 to May 1980 Bizjets operated a Metroliner service between Essendon and Devonport in competition with F27 airline services over the Melbourne/Devonport/Wynyard route. The response of the major carriers was to upgrade their operations by providing first and economy class

services and to discount their fares to approximate the new concessional fares being offered by the commuter operator. From 1976 until the introduction of this commuter operation the fare charged for the F27 services was set equal to the economy class jet fare for the Melbourne/Launceston service. Following their discounting the F27 fare represented about 90 per cent of this jet fare. In approving the fare discounts Nixon remarked:

As Bizjets are now operating over an airline route, it would not be appropriate to constrain the two major operators from competing with the new Bizjet service.[DOT (1979d)]

A few weeks later, on 14 June 1979, the Minister approved increases averaging 10 per cent in the air fares of the major operators. There was no increase in the airlines' fares on the Melbourne/Devonport/Wynyard route, so that this fare now represented only about 80 per cent of the jet fare with which it was previously common-rated. The fare relativity has been restored to some extent since Bizjets ceased operations; in December 1980 this fare was again approximately 90 per cent of the economy jet fare of the Melbourne/Launceston service.

A clear suspicion exists that the demise of the Bizjets operation was significantly affected by predatory pricing perpetrated by the major airlines and condoned by DOT.129 Two comments can be made. Firstly, this episode is likely to have offended many people's elementary notions of fairness and equity. Secondly, while such predatory pricing in competitive market segments offers little scope for additional profits in a static sense (although it can hardly encourage further market entry), the existence of a history of such company failures would undoubtedly prove useful in the longer run as supposed evidence to support the continuation of existing economic regulation of more significant market segments, i.e. trunk route passenger services.

The above discussion indicates that not only can the alleged costs of adjustment be exaggerated but a protracted period of change can also introduce its own severe problems into the industry. Drawing on his experience with U.S.

129 See Government of Tasmania (1980, p. 30) and DOT (1980b, p. 42) for further discussion. The DOT account of this incident does not deny that predatory pricing occurred.
deregulation, Kahn (1979, p. 12) concludes:

... I have as a result been converted to the conclusion that the only way to move is fast. The way to minimise the distortions of the transition, I am now thoroughly convinced, is to make the transition as short as possible.
The Choice Between Alternative Institutions: Regulation versus Competition

Conflict in industry policy formulation arises from the incompatibility of regulatory and competitive market forces. Kahn (1971, p. 1) notes:

the decision to regulate is, typically, a decision also to restrict competition, not just to supplement it in one way or another, but to supplant it.

Hence the decision regarding government involvement in an industry's activities largely amounts to a choice between the institutional frameworks of regulation and competition, and the extent to which each of these forces is permitted to influence the industry. Kahn (1971, p. 46) warns that society should be aware of and take into account the inherent tendencies of these two institutions when choosing among various systems of industrial organisation. This chapter briefly looks at some basic characteristics of regulation and competition\(^\text{130}\) and makes a few observations on the choice between the two.

1. SOME TENDENCIES OF THE REGULATORY PROCESS

Conservatism

Many of the recognised virtues of competition, such as the stimulus to innovation and the link between the performance of particular firms and their market fortunes, are often regarded as defects from the regulatory viewpoint. Regulators give emphasis to stability and predictability, qualities which ease their tasks of planning and administration. Consequently regulation tends towards conservatism.

A bureaucratic concern for 'orderly administration' is

\(^{130}\) Kahn (1971) discusses many of these issues in greater depth.
evident in the regulation of Australia's airlines. DOT (1979a, p. 31) concludes that the supposed vagueness of definition of its public interest goals does not impede the orderly administration of airline licensing. Further evidence is seen in this Review Committee's preference for organising the industry into a structure containing distinct categories of operators with a sharp definition of roles and strict control of inter-category competition [DOT (1979a, p. 69)]. The bureaucracy has always been able to see a clear distinction between the services offered by the two major airlines and those by other operators. For instance, services of commuter operators are 'not airline services'. While this statement is strictly true within the legalistic setting of Australia's Air Navigation Regulations (commuter operators do not hold 'airline licences'), it is unfortunate if such a rigid approach continues to be applied to the economic analysis and regulation of civil aviation. Similarly, the questionable distinction which was perceived by the Review Committee between trunk and regional operators (based on vague notions of 'community of interest' and responsiveness to needs) should continue to provide sufficient bureaucratic flexibility so as not to hinder orderly administration.

This approach to air services and their operators contrasts with the typical competitive framework advocated by many economists who see little need to attempt to segregate the activities of the various firms willing to offer different services in the market. The advantages claimed for a tightly controlled pattern of industry organisation (e.g. economies of scale, economies of market integration and specialisation, and attention to consumer demands) would also be enjoyed under open market conditions. In addition, one would expect a competitive system to show greater flexibility in adapting to changing market circumstances as well as to provide increased incentives towards efficiency for existing operators from the threat of inter-category competition.

**Protectionism**

Increased government involvement in an industry through the regulatory processes also increases the government's responsibility for the economic well-being of the industry. Thus regulators may easily see their objectives, and hence self-interest, in terms of the viability of existing firms in the industry. Regulation can then tend towards protectionism.

with the authorities becoming increasingly concerned with the problems of the industry, e.g. its marginal profitability, its heavy capital requirements, etc. To some extent then, the regulators can usurp the role of management. Sainsbury notes:

The way in which you [Mr Weeden] have answered that [question regarding proposed air services] indicates that you see the main problem as the cost to the carriers. You discussed it from the businessmen's point of view, not from the point of view of whether or not you would approve that type of arrangement. It should not interest you terribly much initially whether people are making money or not.

DOT (1979a, p. 69) reveals its paternalistic attitude when it rejects options leading to increased competition among the various categories of operators:

This carries the danger of operators attempting roles for which they are not ideally equipped.

The possibility of mistaken investments in a competitive market is discussed in Chapter 1. However, the qualifications needed and supposedly possessed by the bureaucracy in order for it to efficiently allocate air transport resources are neither clearly specified nor apparent. Mistakes are also likely on the part of the bureaucracy whose incentive structure may bias its decision-making away from more risky or innovative initiatives. Thus a regulatory environment which denies operators the opportunity to undertake certain activities carries the danger of preventing them from performing roles for which they are ideally equipped.

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132 E.g. DCA, Annual Report, 1968/69.
133 Hansard, SCT, 10 May 1978, p. 4716. Weeden is First Assistant Secretary, Air Transport Policy Division, DOT. Many others share a similar dislike for such close concern for the profitability of particular firms; e.g. The Age, Editorial, 19 May 1979 considers 'this is none of the Government's business'.
134 Perhaps even more: Anderson (1973, p. 16) apparently considered himself to be a 'benevolent old grandfather' of Australian civil aviation.
Distortion of managerial effort

Management may willingly subject itself to increased bureaucratic guidance and less responsibility in return for a more secure operating environment. For instance, EWA urges:

Government should take a more active role in defining the job to be done; in establishing the optimal solution; in limiting the number of air services to those which can be justified economically; in providing operators with reasonable security of tenure over their routes.¹³⁵

While the basic self-interest motivation of the firm can be expected to remain unchanged, the regulatory framework, by altering the incentives facing managers, may result in a re-orientation of management goals. With reduced importance given to market mechanisms for assessing a firm's economic performance and deciding its financial fate, management may be able to direct less attention towards cost minimisation and the provision of innovative services and to concentrate on compliance with the regulations and risk minimisation. Menzies was aware of the fundamental requirements for the most efficient development of Australian aviation:

Of all the means of transport, flying is the one which requires in the highest degree enterprise, a willingness to adventure capital, flexibility of mind, and constant contact with scientific development and commercial practice.¹³⁶

However, Brogden (1968) recognises that throughout its history the real factors determining corporate success in Australian civil aviation have been a 'keen political sense' (p. 11) and 'strong friends in government' (p. 14).

¹³⁵ Hansard, SCT, 16 May 1978, p. 4884. This statement is hardly the voice of free enterprise nor does it augur well for those relying on existing regional operators to provide a competitive check and stimulus to the major airlines.
¹³⁶ Hansard, HR, 25 July 1945, p. 4555.
II. IN THE PUBLIC INTEREST?

Airline policy and the public interest

Regulators and others clearly perceive the 'public interest' to be a desired objective; it is often the justification for and stated aim of policy initiatives. Evatt claims:

... government intervention is sought by the Labour movement only in so far as it is intended to prevent exploitation or oppression of the people, or social injustices.\(^{137}\)

Similarly, Chippindall (1965) has

... no doubt of the single-minded and high motives which have inspired the administrators of that policy over the years.

This interpretation of air transport regulation is supported by Anderson (1973, p. 18):\(^{137}\)

Whenever I faced any problem in Civil Aviation, any development, I was always more concerned with the impact of any decision I made on the travelling public, and the good of the public in general. That was my primary motivation ... We always pressed for things that were, to use a hackneyed phrase, in the public interest.

The Introduction outlined the conditions which are required to ensure that government intervention in an industry improves the economic welfare of the community. Yet this study has revealed little evidence of market failure and has also suggested that the present regulatory system involves a substantial degree of economic inefficiency. Thus, while public interest rhetoric is pervasive in discussions of Australian aviation, sufficient doubt exists regarding the public interest merit of the current policies that an alternative explanation of the choice of these policies should be sought.

One such explanation would emphasise the inability of the authorities to achieve their public interest goals. Regulators may mistakenly interpret the public interest and

\(^{137}\) Hansard, HR, 29 October 1952, p. 3881.
hence pursue policies which are inimical to that objective. On the other hand they may not have the powers or knowledge to successfully pursue public interest aims. Whatever is the reason, the public interest may not be served. Thus Anderson follows his previous quotation with the comments:

> Also we were motivated by a desire to maintain a viable, efficient air transport industry, because we thought that that was in the public interest, too... you had to make a judgement here between what was good for the airlines at any particular time, knowing that you wanted to support them and keep them financially healthy, and what other factors were in the public interest. We fought for years... We were only moderately successful. But we tried...

**The private interest theory of airline policy**

Another possible explanation of observed industry policies is provided by the 'private interest' theory of regulation. This theory postulates that regulation is the result of various groups in society (e.g. bureaucrats, airlines and consumers) competing among themselves through the political system to maximise their own welfare. As the effective political lobbying strength varies among such groups, it is possible for some special interest groups to increase their well-being at the expense of the public interest.

What reasons are there to believe that the private interest theory of regulation offers a useful explanation of domestic airline policy? Firstly, it is generally accepted that the economic regulation of Australian aviation has been to the substantial benefit of the two major operators. Ansett's co-partnership in the Two-Airline system is thought a 'prize offering' and 'the major assets dealt in are Government licences and prohibitions upon competition'. Similarly, the bureaucracy enjoys substantial benefits in terms of employment, power and prestige under the existing regulatory arrangements, while Kirby (1980b) notes that a large proportion of the recommendations of DOT (1979a) coincide with increased work opportunities for the admini-

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138 See Posner (1974) for an overview of the public interest and private interest theories of regulation.
strators of Australia's air transport industry.

There is also little doubt that considerable weight is given to the airlines' viewpoint at the policy formulation stage. For instance, Freeland, when questioned on the likelihood of certain innovative pricing arrangements being adopted, answers:

I do not know what the airlines' reaction would be to that. We were looking particularly at the public interest and it seemed to us that the public interest would be fostered by that. I think I would need to hear the airlines' reaction before I could answer.\(^1\)

In addition, many of the changes in policy which have occurred in recent years may be attributable to shifts in the relative lobbying strengths of particular groups. The Secretary of DOT, Halton (1979) comments:

... certain developments, such as the recent transport policy reviews ... arose from changes in consumer and community attitudes (p. 1)

and

Consumer and community attitudes also appear to have changed in recent years possibly due to, on the one hand, a better information flow from governments to consumers and industry and, on the other hand, to various interest groups being better organised and vocal in putting forward their point of view. (p. 4)

While the observation of increased activity from the non-airline groups appears correct, the driving forces are more likely to be better knowledge of the impact of regulation in general, the economic performance of the Australian airlines and the performances of airlines under alternative regulatory frameworks, rather than any government-initiated information flows. The calls for public participation in the regulatory process, which are discussed in the previous chapter, also indicate a belief in the private interest theory of regulation. Public representation gives greater weight than previously given to the interests of groups other than the bureaucracy and the airlines and thus, under the private

\(^{1}\) *Hansard*, *SCT*, 17 August 1978, p. 5593.
interest hypothesis, possibly results in a different regulatory outcome. Finally it was noted in the Nixon quotation in Chapter 4 (p. 56) that, at least with respect to safety matters, aviation policies are often determined on the basis of effective political demand rather than any concept of need or the public interest.

These observations, together with the spurious nature of many of the public interest arguments used to justify airline regulation and the existing degree of economic inefficiency, suggest that the private interest theory of regulation may provide a superior explanation of current airline industry policies and more accurate predictions of future policy changes.
Conclusion

... accuracy always will be a casualty of propaganda but the misapprehensions to which it leads do not make any easier the task of considering logically [airline regulation]... or of encouraging informed public debate on it. [Hewitt (1979b, p. 9)]

It has been the aim of this study to expose some of the inaccuracies and misapprehensions which have been present in the debate on the economic regulation of Australian civil aviation. There have been two major areas of discussion. Firstly, the study has examined the issue of market failure in the airline industry. It has investigated the many public interest arguments as to why the market mechanism is an unsuitable method of satisfying the community's demands for air services. These arguments include claims that competition among airlines will be destructive or wasteful, will result in many areas without services, or will lead to monopoly exploitation of consumers. The validity of these arguments is seriously questioned.

Several external benefits alleged to be associated with civil aviation have also been considered. While there is scope for disagreement about the significance of these supposed benefits, it appears that these problems, to the extent they exist, are best dealt with directly through subsidies or other fiscal measures rather than indirectly through restrictive market control. Similarly, it was found that the emotive issue of air safety is largely irrelevant to considerations of the economic regulation of airlines. Air safety objectives are not dependent upon market regulation but are more effectively pursued through direct attention to operating standards and procedures. Thus it seems clear that the many public interest arguments used in the Australian debate for rejecting market forces and for supporting detailed economic regulation of airlines do not stand close scrutiny.
Secondly, this study examined the economic performance of the industry under the current regulatory framework. In contrast to the apparent absence of market failure, significant areas of government failure were identified. The Australian air transport industry is marked by a substantial degree of economic inefficiency. A discussion of the policy options available to improve the economic performance of the industry indicated that deregulation, in particular, permitting freedom of entry into the industry, offers the greatest prospects for increased efficiency. In this regard the continued state ownership of TAA not only has little independent impact on the performance of the industry but is, if anything, an obstacle to policy reform.

A theme which is present throughout this study, but especially prominent in the sections analysing the industry's performance and considering various policy options, is the importance of the incentives facing a firm as a determinant of its economic performance. The principal deficiency of the TAP is its failure to provide the major airlines with incentives encouraging them to operate efficiently. Future policy reform should concentrate on correcting this deficiency.

In summary, this study concludes that the combination of a lack of convincing theoretical and empirical arguments to support restrictive airline regulation, the unsatisfactory economic performance of the major airline operators under the current regulatory system and the apparent feasibility of open market competition among airlines indicates the need for substantial regulatory reform.

What is the likelihood of such reform? The private interest theory of regulation suggests that the forces for policy change lie in shifting relative lobbying strengths of the various parties affected by airline regulation. The study noted the increasing influence which consumer-oriented groups have exerted in recent years. In addition, State Governments, especially those of Western Australia and the Northern Territory, have lately taken a higher profile in the industry. It has also been suggested that unless the apparent discrepancy between overseas and domestic air fares is reduced the community will force open competition upon the local operators. However, it is doubtful that these influences are yet strong enough to quickly achieve the

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142 Chanticleer, *Australian Financial Review*, 4 June 1979. The differences between domestic and overseas air fares have been clouded recently by frequently changing factor prices, especially oil prices.
degree of reform which this study judges necessary. For example, many dissatisfied consumers, especially those not currently travelling by air, have little opportunity to express their dissatisfaction since there are few close substitutes. Forsyth (1979, p. 63) notes:

The policy was devised very skilfully such that it would be very difficult to bring any pressure upon it.

In recent years the U.S. domestic airline system has been substantially reformed with policies designed to place increased reliance upon competitive market forces. Many of the elements then stimulating these policy changes are similar to those currently present in Australia, e.g. frequent air fare rises, the embarrassing comparison of the economic performances of the CAB regulated carriers and the less regulated intrastate operators, and advances in economic research of the airline industry. One influential factor not prominent in the Australian situation is the exposure of regulatory malpractices. In the U.S. this issue went further than the general disillusion with government in the post-Watergate period. Kennedy (1975, p. 608) concludes:

Several of the procedures that the Board follows in setting major Board policies - in particular route and enforcement policies - have lacked the openness, intelligibility, and impartiality required by elementary notions of procedural fairness.

These procedures are also described as 'highly improper and probably illegal'.

It is not certain that the Australian industry has been free of similar bureaucratic abuse. For example, Brogden (1980, p. 119) reports the granting of an air route licence to EWA which, he suggests, was designed to act as a 'big stick' towards the major operators. Government of Western Australia (1980, p. 71) also alleges that DOT has abused its financial and safety powers and the widespread industry acceptance of it as the dominant aviation authority by usurping certain licensing and pricing powers in relation to purely intrastate services. However, the relatively secretive nature of Australian air transport regulation compared with

143 This article is the Summary of Report of the Senate Subcommittee on Administrative Practice and Procedure.
the more open, public hearing style of the U.S. system increases the difficulty of detecting undesirable regulatory practices in Australia. The inability of the public to carefully scrutinise Australian regulatory procedures probably lessens the chance of imminent policy reform to the extent that has occurred in the U.S. industry.
Appendix 1

A DESCRIPTION OF AIR TRANSPORT REGULATION IN AUSTRALIA

Several other publications present detailed descriptions of the historical development of Australian aviation policies [e.g. Richardson and Poulton (1968)]. This appendix briefly outlines those powers and policies which determine the present patterns of airline regulation as well as the recently announced proposals for policy amendments.

The impact of the Australian Constitution

Since there is no explicit mention of civil aviation in the Constitution it remains a matter of responsibility for the States. Hence the ability of the Commonwealth to regulate the air transport industry rests with other heads of power, the major ones being its powers to legislate with respect to international and interstate trade and commerce, external affairs, the Territories and Commonwealth places. However, section 92 of the Constitution, which guarantees that trade among the States 'shall be absolutely free', restricts the powers of the Commonwealth to regulate interstate aviation. Thus the authority of the Commonwealth for direct economic regulation of civil aviation is quite limited.

Air Navigation Regulations (ANRs)

The Air Navigation Act 1920-1973 ratifies on behalf of Australia various international agreements on civil aviation and authorises the making of regulations implementing the Act and these agreements and regulations in relation to Territorial, interstate and international air navigation. There are over 300 such ANRs applying to all air navigation within Australia. They mainly deal with technical matters of air operations (e.g. aircraft registration, airworthiness requirements, crew licences, air facilities and flight rules). However, several are important for the economic regulation of domestic air transport.

Licences issued by the Secretary of DOT are required to operate charter and regular public transport air service operations [ANR 197(1) and 198 respectively]. However, there are legal constraints on the assessment of licence
applications [ANR 199]. In particular, the only legal grounds for refusing both interstate or intrastate licences relate to safety considerations. There is also an important variation to these licencing requirements. The Secretary may, if he considers it warranted, exempt the holder of a charter licence from the necessity to obtain an airline licence in order to operate scheduled services [ANR 203]. The practical effect of this procedure is to lessen the cost of providing scheduled air services by lowering the technical standards required for these operations. Widespread growth in commuter services has occurred since the introduction of these exemptions in 1967.

Air fares are controlled through ANR 106 which requires the operator of charter or scheduled air services using Commonwealth air facilities to provide the Minister for Transport with information on the fares charged for these services. The Minister can approve the submitted charges, possibly with variations, or can reject them and direct the adoption of fares that he considers 'fair and reasonable'. An airline must also have its timetable approved by the Secretary of DOT [ANR 106C]. However, these timetables can be disapproved only on safety grounds.

The Two-Airline Policy

The so-called Two-Airline Policy (TAP) is the dominant feature of the regulation of Australia's domestic air transport. Since the Government lacks the constitutional authority for direct economic regulation of civil aviation, it has chosen to control entry into the industry and to regulate the behaviour of its selected operators by means of a series of contractual agreements, the various Airlines Agreements Acts. These provide for termination with five years notice by ATI or the Commonwealth. Other features of the policy are embodied in the Airlines Equipment Act 1938, the Australian National Airlines Act 1945 and the Customs (Prohibited Imports) Regulations.

The fundamental policy objective is to maintain only two operators, one being TAA, of trunk route airline services. The Government is able to ensure that trunk route operations are limited to only AAA and TAA through its powers to prohibit the importation of aircraft. It has been Government policy to refuse import permits for all aircraft types over a specified gross weight unless the aircraft is purchased by a present airline operator or unless other restrictive conditions are satisfied.
The total amount of aircraft capacity which is offered by the two major operators is controlled through the Airlines Equipment Act. The capacity determination provisions of this Act require the Minister to estimate future traffic on competitive and non-competitive routes and then, on the basis of a chosen revenue load factor (e.g. 65 per cent for mixed configuration aircraft on trunk routes), to determine the maximum aircraft capacity needed by each airline to cater for its non-competitive route traffic as well as for half of the competitive trunk route traffic. These determinations are made on a six-monthly basis. The airlines are obliged not to provide capacity on trunk routes in excess of their determination. There is no obligation for the airlines to operate the same aircraft type, as witnessed by their recent choices of different wide-bodied jets. However, there is a requirement that new aircraft purchases will not be 'detrimental to the stability of the domestic air transport industry'.

The TAP also allows for the rationalisation of the air services offered by the major operators. The so-called Rationalisation procedures enable TAA and AAA to consult and resolve differences on a wide range of matters, e.g. fares, timetables, aircraft types, capacity and load factors. Thus the airlines have considerable scope for discussion and joint implementation of a wide range of features affecting domestic air services.

The policy also specifies procedures to be followed when the airlines are in dispute. A Rationalisation Committee is established consisting of a representative of each of the airlines and a Co-ordinator nominated by the Minister (the Secretary of DOT). If the airlines are unable to agree on any of the matters which they keep under review, the matter in dispute can be referred to this Committee by either of the airlines. If, after consideration of the issue by the Committee, the airline representatives are still unable to reach agreement the Co-ordinator shall make a final decision. If one of the airlines is dissatisfied with the decision of the Co-ordinator it can appeal to the Arbitrator who is usually a Justice of a federal court. The airline representatives will confer on the matter under the chairmanship of the Arbitrator who, if they are unable to agree, shall decide the issue. The operators are obliged to comply with all their Rationalisation agreements and with any decisions of the Co-ordinator or the Arbitrator.

In response to the problems caused by the preferential treatment of TAA during the immediate post-war years a consistent element of the TAP has been the desire to ensure
that competition between the government and private operators is fair and equal. Hence the Commonwealth undertakes not to unfairly discriminate between the two airlines, especially with respect to the granting of import licences and the allocation of airport facilities. Government business is freely available to both operators and each is given a substantially equal share of air mail. The Commonwealth also provides financial assistance in the form of loan guarantees to the private airline to ensure that it can obtain the aircraft necessary to match the services of its competitor. In addition, the Australian National Airlines Act has been amended in an effort to make the cost structures of the two operators as similar as possible. Thus TAA must pay all government taxes and rates, it must keep self-insurance funds in a prescribed account in the form of Commonwealth securities, it must aim to make sufficient profits to meet a dividend target set by the Commonwealth, and it is able to diversify into non-airline activities.

Finally, the airlines face certain obligations under the TAP. These include: not to dispose of aircraft without Commonwealth consent; to maintain existing rural services so long as revenue exceeds direct operating costs and not to cease operating a service without attempting to replace it with an ANR 203 (i.e. commuter) operation; to investigate the introduction of promotional fares and other measures designed to stimulate traffic and air freight; to comply with airport curfews; and to acknowledge that the Commonwealth can permit other operators to develop air services on non-trunk routes and specialist freight and passenger services of a nature not adequately provided for by the major operators.

Proposed amendments of the Two-Airline Policy

In late 1980 the Government announced amendments which it proposed to make to the TAP [see DOT (1980a)]. The Minister for Transport, Mr Hunt, stated that changes to the TAP were necessary 'to foster increased competition within the aviation industry in a rational and orderly manner'. The basic features of the policy amendments include:

(a) removal of air freight from the TAP - Thus freight will be excluded from the capacity determinations of the major operators. Existing and new operators will be able to provide freight services in unrestricted competition.

(b) removal of air mail from the TAP - Australia Post will be able to negotiate without constraint with any
(c) precise definition of the roles of air operators - The new Agreement provides extensive definitions of the roles of the trunk airlines and of other operators. The trunk route network is defined. TAA and Ansett will be the only two operators of scheduled domestic passenger services over trunk routes. Other domestic operators can provide services over 'prescribed' routes which are mainly intrastate or current regional routes. There is only limited scope for overlap between the major operators and others. In addition, the respective roles of Qantas and the domestic airlines are defined. The domestic airlines can independently provide only domestic services; Qantas is similarly restricted to international operations.

(d) orderly development of the aviation industry - Import policy will be relaxed to allow the acquisition of large jet aircraft by regional and cargo operators. However, freight operators must assure the Secretary of DOT that new aircraft will be used exclusively for freight operations. Similarly, regional operators wishing to import a large jet aircraft must undertake to comply with the capacity determination procedures of the Airlines Equipment Act. In addition, operators competing with the major airlines over trunk routes will not have approved fares which are lower than those of the major airlines.

(e) revised consultative arrangements - The major airlines 'must consult' only on aircraft utilisation, load factors and core fares. A review system exists for resolving disputes concerning these matters. The airlines 'may consult' on other issues. The 'may consult' provision allows increased scope for unilateral action by an airline.

(f) new procedures for fare approval - The airlines will be required to justify their charges every six months. There will also be a simplified review system for limited cost increases in certain specified areas (e.g. wages, fuel and ANCs).

(g) increased reporting obligations on the major airlines

(h) time horizon of new Agreement - The new Agreement will last for five years after which there will be five years' notice of termination.
Appendix 2

LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AAA</td>
<td>Ansett Airlines of Australia</td>
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<tr>
<td>AFCO</td>
<td>Australian Federation of Consumer Organisations</td>
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<tr>
<td>AFTA</td>
<td>Australian Federation of Travel Agents</td>
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<tr>
<td>ALP</td>
<td>Australian Labor Party</td>
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<tr>
<td>ANA</td>
<td>Australian National Airways</td>
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<tr>
<td>ANC</td>
<td>Air Navigation Charge</td>
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<tr>
<td>ANR</td>
<td>Air Navigation Regulation</td>
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<td>ATI</td>
<td>Ansett Transport Industries</td>
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<tr>
<td>BPA</td>
<td>Bush Pilot Airways</td>
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<tr>
<td>BTE</td>
<td>Bureau of Transport Economics</td>
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<tr>
<td>CAB</td>
<td>Civil Aeronautics Board</td>
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<tr>
<td>DCA</td>
<td>Department of Civil Aviation</td>
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<tr>
<td>DLP</td>
<td>Democratic Labour Party</td>
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<tr>
<td>DOT</td>
<td>Department of Transport</td>
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<td>EWA</td>
<td>East-West Airlines</td>
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<tr>
<td>ITA</td>
<td>Institut du Transport Aérien</td>
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<tr>
<td>TAA</td>
<td>Trans-Australia Airlines</td>
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<tr>
<td>TAP</td>
<td>Two-Airline Policy</td>
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Christopher Findlay • Michael Kirby
Frank Gallagher • P. J. Forsyth • David Starkie
Margaret Starrs • Colin Gannon

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Issues in Domestic Aviation Policy

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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
Changes in the Air?

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

<table>
<thead>
<tr>
<th>Stage Length</th>
<th>Aircraft</th>
<th>Seats</th>
<th>Average Cost per passenger*</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 km</td>
<td>CV 580</td>
<td>56</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>B 737-200</td>
<td>130</td>
<td>42</td>
</tr>
<tr>
<td>1600 km</td>
<td>B 737-200</td>
<td>130</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>B 727-200</td>
<td>162</td>
<td>58</td>
</tr>
<tr>
<td>2400 km</td>
<td>B 727-200</td>
<td>162</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>DC 10-10</td>
<td>380</td>
<td>69</td>
</tr>
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* 75 per cent load factor


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.
Changes in the Air?

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 be 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 Fried­lander, 1982; Baumol, 1982). Other firms should be able to enter the market on equal terms to the incumbent and have freedom over pricing. The case of entry requires that durable goods that account for high fixed costs are 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
Changes in the Air?

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.
Findlay: Is Air Transport Contestable?

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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

Michael G. Kirby
Michael G. Kirby has completed a B.Ec. (Hons) from the University of Sydney (1975) and a M.Ec. from the Australian National University (1979). Since completion of undergraduate studies he has been employed by the Treasury, the Bureau of Agricultural Economics, and Australian National University. While employed at ANU he undertook research studies towards a Ph.D. on the economic regulation of Australia's domestic air transport.

The US Airline Deregulation Experience and Its Implications for Australia

Michael G. Kirby

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.

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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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 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, 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 news.
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
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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 liberalization 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 utilizes 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.
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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 trunk airlines was 9.5 hours per day during 1977-1980 compared with 8.99 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.
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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
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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
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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.
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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-
Deregulation has led to fundamental improvements in the domestic airline industry through increasingly cost-based fares, network restructuring, and greater efficiency overall.

4. 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 regulatory framework. In particular, it exerts greater control on price 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.
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The US experience indicates that bureaucratic direction is not always 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, 1982).
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If of study 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.
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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 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 extension 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 environment?
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**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 versus 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
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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 airlines from operating on Australia’s major domestic routes. We tend to forget that this situation is uniquely Australian. Within Europe a good deal of
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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 transcontinental routes than on short-haul east coast routes.
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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 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
Now is the time for the people in Canberra to start thinking seriously 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 not 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 most 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

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Airline Costs, Revenues and Profit During a Recession

P.J. Forsyth

INTRODUCTION

Domestic airlines in Australia are recovering from a difficult period. Qantas 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
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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 for which costs are 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 non-aircraft costs are related to 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 costs when traffic is below forecast levels will mean that load factors fall in a recession. This will happen in regulated and unregulated markets. Recession 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,
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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 his 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
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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 (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 magnifying 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 in 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 IAF might seek to achieve efficient pricing, which would induce greater losses for some airlines in some years and greater profits in others. But it is far from
It is 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.
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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 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 15 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 an 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 profitability that might be a better way of doing it even though it seems to be discriminatory or involve cross— subsidealisation 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 their 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 sacred 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.
Discussions.

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 AFC is obliged under the cost allocation review to somehow deal with those under the heading of residuals. A potential way out on economic rounds 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 make 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.

I have a question for Peter Forsyth, about your conclusion that perhaps the AFC 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 on 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 AFC 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.
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**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 has 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

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Regulatory Change and Competition in the South Australian Airline Market

David Starkie and Margaret Starrs

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 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. 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.

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 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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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.

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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 rent 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 vector of the incumbent firm(s). Consequently an industry without sunk costs —
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 impossible 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.

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.
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) 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 type; 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 the ‘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

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1. 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.

2. 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.

3. 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**

<table>
<thead>
<tr>
<th>Operator</th>
<th>Aircraft Type Utilised*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airlines of South Australia</td>
<td>Fokker F27 (4)</td>
</tr>
<tr>
<td>Albatross Air Charter</td>
<td>Piper PA 23 (2)</td>
</tr>
<tr>
<td></td>
<td>Beech 65 (1)</td>
</tr>
<tr>
<td>Commodore Aviation</td>
<td>Bandeirante (1)</td>
</tr>
<tr>
<td></td>
<td>Cessna 402 (4)</td>
</tr>
<tr>
<td>Drennan Aviation</td>
<td>Partenavia P68B (1)</td>
</tr>
<tr>
<td>Emu Airways</td>
<td>Cessna 402 (2)</td>
</tr>
<tr>
<td>Eyre Charter</td>
<td>Piper PA 34 (1)</td>
</tr>
<tr>
<td></td>
<td>Cessna 402 (1)</td>
</tr>
<tr>
<td>O’Connor’s Air Service</td>
<td>Cessna 402 (3)</td>
</tr>
<tr>
<td></td>
<td>Partenavia (1)</td>
</tr>
<tr>
<td>Opal Air</td>
<td>Cessna 421 (3)</td>
</tr>
<tr>
<td>Rossair</td>
<td>Cessna 402 (4)</td>
</tr>
<tr>
<td>Skytours</td>
<td>Aero Commander 680</td>
</tr>
<tr>
<td></td>
<td>Beech 65(1)</td>
</tr>
<tr>
<td>Trans Regional Airlines</td>
<td>Piper PA 31 (2)</td>
</tr>
<tr>
<td></td>
<td>Bandeirante (1)</td>
</tr>
</tbody>
</table>

* Indicative only, subject to frequent change.
Starkie and Starrs: Regulatory Change

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

<table>
<thead>
<tr>
<th>Destination</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingscote</td>
<td>61</td>
<td>7</td>
<td>68</td>
</tr>
<tr>
<td>P Lincoln</td>
<td>50</td>
<td>2</td>
<td>52</td>
</tr>
<tr>
<td>Wayalla</td>
<td>15</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td>Finschaw</td>
<td>21</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>P Pirie</td>
<td>17</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>A. Gambier</td>
<td>11</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Eicken Hill (NSW)</td>
<td>11</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Aldura (Victoria)</td>
<td>1</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Farnham</td>
<td>14</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>American River</td>
<td>14</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Farnana</td>
<td>-</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Ligh Creek</td>
<td>8</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>F Augusta</td>
<td>2</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Cve</td>
<td>6</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>C. Guana</td>
<td>-</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Tumby Bay</td>
<td>10</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Cummins</td>
<td>-</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Cober Pedy</td>
<td>9</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Seaky Bay</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Gympic Dam</td>
<td>1</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Eick</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Adaminna</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Hawker</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Flintlon</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Gwell</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Hamb</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>A. Kingston</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Larcocorte</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Dillilient</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Yoochera</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Illawera</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Charlie</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Jawarrs Rock (NT)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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, enter the competitive balance (the total number of competitors is five, the same number that serve Kingscote) but in the the Eyre Peninsula case it
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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 expected. But just as the Committee is made aware of the need to maintain a competitive level of air fares, the potential for excessive profits in some lines is also kept in mind. The Committee also discharges its traditional role of rejecting unnecessary duplication of service and entering into consideration the necessity of providing adequate service to rural markets.

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 effectuated 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’.
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...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.
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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

<table>
<thead>
<tr>
<th>Operator</th>
<th>September 1979</th>
<th>May 1983</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ports Served</td>
<td>Weekly Flights</td>
</tr>
<tr>
<td>ASA</td>
<td>7</td>
<td>141*</td>
</tr>
<tr>
<td>Commodore Aviation</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>Emu Airways</td>
<td>3</td>
<td>56</td>
</tr>
<tr>
<td>Opal Air (SA)</td>
<td>5</td>
<td>41</td>
</tr>
<tr>
<td>Pagas/Trans Regional</td>
<td>8</td>
<td>98</td>
</tr>
<tr>
<td>Rossair</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Williams Aviation</td>
<td>7</td>
<td>68</td>
</tr>
<tr>
<td>Drennan</td>
<td>-</td>
<td>**</td>
</tr>
<tr>
<td>Albatross</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Eyre Charter</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>O’Connor’s</td>
<td>-</td>
<td>18</td>
</tr>
<tr>
<td>Skytours</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL FLIGHTS</td>
<td>434</td>
<td></td>
</tr>
</tbody>
</table>

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

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\(^7\) 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.
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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, Eyre Charter's and Opal's Services to and from Marla and Olympic Dam. None of the eleven centres thus served were on the network in September 1979. Extensive new 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 Adelaide and 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 commute 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 Cummins, 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.

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). 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.


Changes in the Air?

This was later dropped. ASA dropped its lunch-time departure and this slot was taken up by Commodore (December 1980). By May 1981 Commodore had introduced a light aircraft in the 4.00 to 5.00pm slot, but dropped it from the timetable. Eye 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

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<tbody>
<tr>
<td>0700-0759</td>
<td>C</td>
<td>C</td>
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<td>C</td>
<td>RC</td>
<td>C</td>
<td>C</td>
<td>C</td>
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<td>0800-0859</td>
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<td>A</td>
<td>A</td>
<td>A</td>
<td>AE</td>
<td>AE</td>
<td>AE</td>
<td>AE</td>
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<tr>
<td>0900-0959</td>
<td>C</td>
<td>C</td>
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<td>C</td>
<td>C</td>
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<tr>
<td>1000-1059</td>
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<td>1100-1159</td>
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<td>1600-1659</td>
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<td>1800-1859</td>
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<td>1900-1959</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
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<tr>
<td>TOTAL</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: analysis of timetables

Notes: C — Commodore
A — ASA
R — Rossair
E — Eye 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)

<table>
<thead>
<tr>
<th>DATE</th>
<th>OPERATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ASA</td>
</tr>
<tr>
<td>9/78</td>
<td>3</td>
</tr>
<tr>
<td>1/79</td>
<td>3</td>
</tr>
<tr>
<td>2/80</td>
<td>3</td>
</tr>
<tr>
<td>5/81</td>
<td>3</td>
</tr>
<tr>
<td>2/82</td>
<td>7(4)**</td>
</tr>
<tr>
<td>9/82</td>
<td>5</td>
</tr>
<tr>
<td>8/82</td>
<td>5</td>
</tr>
<tr>
<td>3/83</td>
<td>5</td>
</tr>
</tbody>
</table>

* 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 an AI
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.

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; nonetheless 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 those 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>
<thead>
<tr>
<th>Revenue Passenger Load Factor</th>
<th>Weight Load Factor</th>
<th>Annual Revenue Hours Per Aircraft (Total) (RPT Services)</th>
<th>Total Hours on Scheduled Services</th>
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<tr>
<td>1982a</td>
<td>64.7</td>
<td>58.2</td>
<td>2,332 1,620</td>
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<tr>
<td>1981</td>
<td>63.8</td>
<td>57.5</td>
<td>2,306 1,938</td>
</tr>
<tr>
<td>1980</td>
<td>63.8</td>
<td>58.3</td>
<td>2,129 2,004</td>
</tr>
<tr>
<td>1979</td>
<td>66.2</td>
<td>59.8</td>
<td>2,178 2,067</td>
</tr>
<tr>
<td>1978</td>
<td>68.2</td>
<td>60.0</td>
<td>2,315 **</td>
</tr>
<tr>
<td>1977</td>
<td>67.8</td>
<td>62.8</td>
<td>2,114 **</td>
</tr>
</tbody>
</table>

*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 more 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 Bandeirante. It is assisted by what we discern to be limited economies of scope, which allow for the long-run coexistence 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 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, using 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.
Changes in the Air?

References


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

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.

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
Changes in the Air?

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. 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 Airport 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 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 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 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 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 in 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 not 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, for certain demand for which will sometimes exceed the maximum available. Some kind of 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 natural 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. If
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 towitch. 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 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.
Changes in the Air?

The Kingsford Smith expansion problem

The question of whether to expand KSA can readily be put to the test of a 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 airport capacity, the former being the more costly. There is the possibility 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 then 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 noisier 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.
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.
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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 the 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 pre-
pared) 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
dealer, 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


Discussion

C: 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.

C: 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 with 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 aerodromes 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 a lot cheaper than building a major international airport.

C: 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
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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 indefinitely for the right price. It could be the last day before the scheduled time 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 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 retain 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 short 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 there 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 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 airport would be charging higher fees. So users would have to scramble less to pay fewer navigational charges. This would help to avoid the situation where three or four 20-seater aircraft hold up several jumbos.
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 rather 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 Alston 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 tough 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 straightforward economic ones with dollar signs on them. More houses will be affected there, a wilderness area will be affected there, and so a politician will have to work out that sort of balance. But it is a straightforward tradeoff.
Three R's of Domestic Aviation Policy in Australia: Regulation, Redistribution and Risk

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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 outcomes of alternative policies. Therefore I may be somewhat vulnerable to the charge of inconsistency, but I have not let this circumstance 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.

III. 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

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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 —
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...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
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have asserted varying degrees of influence in shaping and preserving its
include: (1) the airlines' owners, shareholders and employees (staff and
management); (2) certain consumers of airline services (particular type
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 the
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 the
heading. The first concerns the actual exposure to risk of an accident
associated with travel by air. There are some important research ques-
tions 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
so is superb, and among the top in the world. The high technical
performance and reliability of the airlines and the strong regulation
governing airworthiness, flight standards and air operations illustrate the
importance placed on minimising exposure of passengers and others
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 an
approaches to air safety. Air safety cannot really be divorced from economic considerations — it costs money to maintain. The selected economic
effective strategy may be the one that achieves maximum tolerable levels
of risk — despite a strong reluctance on the part of politicians and
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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 reasonably 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.

OTHER 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 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 the 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 airline
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
feasibility, 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
decluding effects on services offered, passenger groups and others affect­
et and the retaliation prospects of the existing airlines. Such research
might 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.

The opportunity costs may be high. By suppressing or removing the
incentive for entrepreneurial effort, the search for profitable innovations
in new markets, products and procedures — is discouraged and eco­

momic performance can suffer.

Regulation of economic activity, including airlines, is typically
adopted to meet a number of objectives. Often these objectives are not
defined and invariably they are in conflict. A proper starting point
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
formation base so that there is reduced need for judgments about
individual policy outcomes and an improved basis for making choices
among policy alternatives themselves.

II. CONCLUSION

Tearing in mind the current state of knowledge and judgment, let me
conclude by expounding three different views of domestic aviation policy
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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.
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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 fares 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 fare procedure.

There are three important points to consider when making decisions on discount fares: discount fares should be aimed at generating new travelers, 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 should 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 to 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 airline 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 diversification of responsibility between government and the airlines with respect to price, capacity, and quality. Then the discretion and hence the responsibility and 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 environment.

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 service 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...
Discussion

It 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
area 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
deflect 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
crive 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 auction-
and allocating slots, given the logistical difficulties facing the interna-
tional airline operators. Those difficulties are of course a function not
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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 the 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 representatives here, and I think we ought to thank 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 adviser 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 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 Kevin Cairns raised the question of hubs and so forth, the discussion virtually stopped and ended with a suggestion that that was the airline 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
Discussion

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 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.

Lindsay: The US experience is an obvious source of data on what general decisions 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. Isn't 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 recognize the equity goals that Kevin Cairns rightly stressed.

Bill: 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 how markets or deregulated environments 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 putting 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.

Raider: 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.
Changes in the Air?

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 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 of 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 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 America, was that there was an increase in load factors, although the load factors in America are still lower than Australian load factors. And this always worries me when I think about deregulation. Will that be the 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
Discussion

A 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.

Cannon: 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 says 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 in 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-West's and so on 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 will deal 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 the people we perceived as interested in the aviation area to participate and it 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.
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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.
PAPER 5:

Albon, R.P. and Kirby, M.G.,

"Cost-Padding in Profit-Regulated Firms",

Economic Record, 59(164), March 1983, 16-27.
Cost-Padding in Profit-Regulated Firms*

ROBERT P. ALBON and MICHAEL G. KIRBY

Australian National University, Canberra, ACT 2600

When entry into an industry is restricted, economic regulation of that industry is often directed at preventing existing firms from monopoly pricing behaviour. One form of such regulation is to set prices so as to control the level of profits earned by these firms. This paper briefly reviews the relevant economic literature and presents a model of the regulated firm in which such price-setting procedures provide an incentive to inflate costs above minimum levels. The welfare cost of this form of regulation can then exceed that occurring at the unconstrained monopoly outcome. The setting of air fares under the Two-Airline Policy and the regulation of natural gas in NSW are discussed in the context of this analysis.

I Introduction

Public justification of government regulatory actions appears frequently to be based on a fear of private monopolization of an area of economic activity. In the face of such fears several regulatory options are available. One approach, very commonly used in Australia, is to create a government-owned monopoly which is supposed to act in the public interest. A second alternative, more popular in the United States, is to create a private monopoly which is then subjected to further regulatory controls, e.g. price setting, in an attempt to make it behave in the public interest. In addition, there are mixed alternatives. One of particular interest is the operation of a government-owned firm with a private firm or firms in a closed and regulated market. Finally, the government could adopt a more market-oriented approach which is designed to foster conditions conducive to competition among firms.

This paper is primarily related to the second of the above options. It examines the effects of profit regulation on private firms in closed markets. In particular, we are interested in assessing whether such regulation is capable of reducing or eliminating the social (efficiency) costs of monopoly. We emphasize the incentives of firms to incur 'unnecessary' costs as a substitute for disallowed profits.

Our approach is related to a number of areas of study which are briefly reviewed. We then outline a simple model in which the profit-regulated monopoly will tend to operate above its minimum costs of production and consider alternative means to attack this cost-padding problem. The case for some form of cost control seems not as strong as is sometimes thought. Indeed, our discussion raises considerable doubts on the effectiveness of profit regulation to deal with alleged monopoly problems. Finally, we consider two cases of profit regulation in Australia within the context of our model. The first of these is the case of the domestic civil aviation industry in which trunk route air services are largely reserved for the two major operators, the privately owned Ansett Airlines of Australia (AAA) and the government-owned Trans-Australia Airlines (TAA). Second, we
examine the supply of natural gas in Sydney where the Australian Gas Light Company (AGL) acts as the sole supplier in a regulated market. The available evidence, while certainly not definitive, is consistent with the thrust of our analysis.

II Profit Regulation and Cost Efficiency

(i) A Brief Review of the Literature

The literature on the regulation of monopolies has a number of strands, each with substantial origins in the 1960s. Since we are mainly concerned with a particular form of regulation (profit control) and with a particular aspect of the regulatory effect (incentives to engage in 'cost-padding'), we avoid to some extent several of the issues which have been raised previously.

Much of the United States literature on regulation of monopolies has been inspired by the form of regulation which has generally been utilized in that country. The regulated firm is allowed a 'fair' rate of return on its 'rate base' (a measure of the value of the firm's capital assets). In a seminal article on rate of return regulation, Averch and Johnson (1962) present a model which predicts that profit-maximizing firms regulated in this way will have an incentive to adopt economically inefficient production techniques involving an excessive use of capital equipment relative to labour. This arises because the firm can increase its total profits by expanding its rate base on which a proportionate return is allowed, as long as the allowed rate of return exceeds the cost of capital to the firm. Averch and Johnson's original paper was responsible for the inspiration of many studies which elaborated on different aspects of rate of return regulation, including the 'fair' rate of return, the rate base, the effects of different depreciation rules and empirical tests.

The Averch-Johnson over-capitalization effect is not directly relevant to the type of control discussed in this paper where regulation is aimed at limiting total profits. Under this form of regulation a firm cannot gain additional profits by 'artificially' expanding its employment of capital. However, Bailey and Malone (1970) analyze the imposition of a profit ceiling (as well as other forms of regulation, e.g. rate of return) on monopoly firms under differing managerial objectives such as maximizing profits, sales, output or rate of return. They note that a sales maximizer facing a fixed profit constraint has an incentive to increase costs whenever demand is inelastic. However, they do not consider a utility maximizing firm nor develop the notions of cost-padding which are discussed below.

Another area of analysis which can be related to the regulation of monopolies is the 'managerial discretion' literature which received a major impetus through the work of Williamson (1963). The notion of 'expense preference' is related to what we refer to as cost-padding or cost inefficiency. Williamson defines 'expense preference' along the following lines (p. 1034):

... management does not have a neutral attitude towards costs. Directly or indirectly, certain classes of expenditure have positive values associated with them. In particular, staff expense, expenditure for emoluments, and funds available for discretionary investment have value additional to that which derives from their productivity.

In his formal model, management is constrained to the extent that stockholders require some minimum profit to be earned. Over and above this level, 'the management is largely free to exercise the monopoly power that the firm possesses at its own discretion' (p. 1054).

Another relevant paper is Alchian and Kessel (1962). Their central argument can be represented by the following (p. 163):

Public regulation of monopolies is oriented about fixing final prices in order to enable monopolists to earn something like the going rate of return enjoyed by competitive firms... If regulated monopolists are able to earn more than the permissible rate of return, then 'inefficiency' is a free good. More properly, it is not inefficiency at all but efficient utility maximizing through nonpecuniary gains.

This quotation leads to further considerations pertinent to our approach in the next sub-section.

Alchian and Kessel discuss a situation where firms will take out profits if they can but will incur unnecessary costs if the amount of potential profit exceeds the allowed profit. The wishes of
management dominate only after the shareholders are satisfied as best they can be in the regulatory environment. There is, thus, a difference between Williamson and Alchian and Kessel, as in the former case, managerial discretion occurs when some minimum profit necessary to appease shareholders is earned.

A second consideration pertains to whether there is any inefficiency associated with non-pecuniary gains. The literature on tied versus lump-sum transfers (see the review by Browning, 1975) concludes that a dollar which is untied will be worth more than a constrained dollar. Several empirical studies suggest that the consumption inefficiency associated with tying in welfare schemes can be considerable. For example, Clarkson (1976) estimates that the deadweight welfare costs of the food stamps programme in the United States are in the order of 25 cents in the dollar. Similarly, Kraft and Olsen (1976) find an inefficiency of about 27 cents in the dollar in their analysis of a US public-housing project. By analogy with this literature, it might be expected that if firms have to settle for non-pecuniary gains rather than pecuniary gains they will receive less satisfaction per dollar, i.e. there will be an efficiency cost. Alchian and Kessel seem to agree with this approach when they claim that the 'man who spends it without the restriction' (p. 164). Williamson also notes that restrictions on emoluments will normally prevail, thus reducing a dollar to get an equivalent satisfaction if he can.

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The literature on X-inefficiency (see Leibenstein, 1966; the critique by Parish and Ng, 1972; and a recent review by Grenning, 1981) suggests that the costs of a firm with a protected market position will rise because of management enjoying greater leisure than would be possible under competition. However, we are mainly interested in the impact that profit regulation itself has on cost levels rather than the impact of the move from an open to a closed market environment. Nonetheless, Parish and Ng's critique is of some interest because they argue that managerial slackness (the 'quiet life') involves benefits to management such that excess costs cannot be regarded as a deadweight loss. However, managerial slackness of this kind, which essentially involves an unconstrained choice by the firm between profits and excess costs, is not what we have in mind in this paper.

Finally, the literature on the economics of public bureaucracy is relevant to the problem of regulatory control of a private monopoly. As analyzed by McKenize and Tullock (1978, p. 411), the public bureaucracy is likely to be a wasteful institution with excessive costs and/or size. To the extent that it incurs unnecessary costs, the bureaucracy pursues the same behaviour as might the regulated private monopolist. In addition, the public bureaucracy is the institution that will be charged with surveillance of the regulated monopolist. Thus an understanding of the incentives of public bureaucrats is considerably important.

(ii) A Model of Cost-Padding
Consider a firm operating in an industry where entry is effectively prohibited by the State. Assume that, in the absence of further intervention on the part of the authorities, the firm would seek to maximize profits, $\pi$, by equating marginal revenue and marginal costs and operating at the usual monopoly outcome ($P_m, Q_m$), where $\pi_m$ is earned as profits. The regulatory authorities will typically seek to prevent the firm earning such 'excessive' profits through some form of price control. This paper is concerned with the case of profit regulation, i.e., where prices are set so that the regulated firm earns some chosen level of profits, $\pi_r$, where $0 \leq \pi_r < \pi_m$.

When profits are limited in this fashion, the regulated firm has an incentive to capture the remaining potential rents, $\pi_m - \pi_r$, through inflating or padding costs of production with 'unnecessary' expenses. These additional costs are unnecessary in the sense that they would not be incurred if the firm faced no price controls and so...
was allowed to extract its monopoly rent as profits. While such expenses are of some benefit to the firm, they will typically yield less utility than the equivalent dissipated profits since, by definition, they are incurred only when the profits are disallowed. The 'second-best' nature of cost-padding compared with direct profit-taking is reflected in our specification of the firm's utility function in equation (1) below. The incentive for the profit-regulated firm to be cost inefficient can be accommodated if the regulatory authorities do not possess complete knowledge of the cost conditions facing the industry. This will almost certainly be the case.

Consider the following model of this regulatory process. Assume that the regulatory authorities merely verify that costs have been incurred when determining prices necessary to achieve the chosen profit target. Assume further that the firm faces the following utility function with profits and cost inefficiency as arguments,

\[
V(n, C_l) \quad (1)
\]

where \( V_n > V_C / > 0 \) for all \( n, C_l \); \( n = R - C - C_l \) and \( R(Q), C_l(Q) \) and \( C_l(Q) \) are total revenue, total costs (with market entry prohibited but in the absence of price controls) and cost inefficiency respectively.

The firm will then optimize its position by choosing the level of output, \( Q \), and the degree of cost inefficiency, \( C_l \), such that utility is maximized subject to the profit target constraint, i.e.,

\[
\text{Max} \quad V(n, C_l) \quad \{Q, C_l\}
\]

s.t. \( n = \pi_r \). (2)

The relevant first-order conditions become

\[
\begin{align*}
U_A(R_Q - C_Q - C_l Q) + U_C(C_l Q) & - \lambda (R_Q - C_Q - C_l Q) = 0 \quad (3) \\
- U_v + U_C + \lambda &= 0 \quad (4)
\end{align*}
\]

Note that we are not here explicitly concerned with any managerial slackness which might still exist in this situation, which seems to be the chief concern of the X-inefficiency literature.

We take a fairly broad interpretation of 'the firm'. Thus, for example, factor inputs might capture some of the potential monopoly rents through, say, the existence of non-competitive elements in factor markets, e.g. unions. We do not explicitly consider the process by which the potential rents are allocated to the various interested parties in the firm (e.g. workers, management owners) or their rent-seeking activities.

where \( \lambda \) is the Lagrangean multiplier.

Solving these equations yields the familiar result

\[
R_Q = C_l Q. \quad (5)
\]

i.e., the usual monopoly optimizing condition.

Thus under this simple form of regulation

\[
Q_r = Q_m \quad \text{and} \quad P_r = P_m \quad (6)
\]

so that \( C_l = \pi_m - \pi_r \). (7)

The firm's response to profit regulation can be illustrated using iso-profit curves as in Figure 1.6

For simplicity assume that the firm faces constant costs, \( AC \). Then the regulatory authorities are aiming at point \((P', Q')\), where \( \pi_m \) is the allowed level of profits. However, the firm optimizes its position by incurring and revealing costs \( AC_r \), so that the actual regulatory outcome is \((P, Q)\). Thus the difference between the potential monopoly profit and the allowed level of profit is captured through cost inefficiency (the hatched area).

This regulatory strategy and result has important efficiency implications. In addition to the usual triangle (the Marshallian measure of the

6 Note that we are not here explicitly concerned with any managerial slackness which might still exist in this situation, which seems to be the chief concern of the X-inefficiency literature.

6 The iso-profit curves take the general form \( P = (x + C) / Q \).

7 Assume that the regulatory authority selects the largest output consistent with the chosen profit target.
deadweight loss) associated with monopoly pricing behaviour, the welfare loss will very likely include some deadweight loss due to the cost inefficiency incurred. Cost inefficiency will be a waste, not a transfer, to the extent that the increase in costs exceeds the firm's subjective valuation of it. The welfare loss associated with cost inefficiency is revealed in Figure 2 which shows the firm's regulatory profit constraint, its possible trade-off between profits and padded costs and its preferences between these two items. Subject to the profit constraint, the utility maximizing firm chooses to operate at point B where its costs are padded by D dollars. At B the firm is worse off by AE than it is at its unconstrained optimum, point A. In addition, the community suffers further deadweight losses from the cost of the bureaucracy necessary to administer the price-setting procedures and from any rent-seeking activities which are not measured in the cost inefficiency, e.g., those of labour unions.

\[ \text{FIGURE 2} \]

Bureaucrats often seem unaware of the consequences of the type of regulation which we have considered. However, even if the regulatory authorities are aware of the likelihood of cost inefficiency, they seldom have strong incentives to respond. They may even face disincentives to be vigilant with respect to costs. For example, those who are involved with regulating private firms might be embarrassed by the possible repercussions of drawing attention to cost-padding of the type which, as noted earlier, may very well exist in their own bureaucracies. Regulators may also be in a position to enjoy direct gains from the extra costs incurred. This might occur through various means, e.g., from a convivial working relationship with the regulated firm and expanded career opportunities through to the extreme case of bribery. Whatever the reason, cost control frequently gets little emphasis relative to profit control.

However, increased attention to cost control may not be an appropriate solution to the inefficiencies of the regulated monopoly. The surveillance of cost levels is a costly exercise in itself, so that additional regulatory costs must be incurred in an effort to reduce the waste. Only if the extra regulatory costs are less than the resultant reductions in waste will they be worthwhile. Some perverse results might also be possible. A heightened degree of monitoring may change the nature of the unnecessary costs incurred so that cost-padding becomes more devious and thus perhaps involves lower subjective valuations to the firm. Irrespective of regulatory costs, there could be a phenomenon where the amount of unnecessary costs is reduced but the social cost is increased.

In summary, this model suggests that under profit regulation the community will still face the usual monopoly price/quantity outcome but, almost certainly, with increased deadweight costs. In these circumstances social welfare could be improved by the regulatory authorities ceasing to control prices. In addition, there is the need for the State to reconsider the rationale for its initial decision to prohibit market entry and to re-assess any perceived benefits from this action in the light of its inefficiency consequences.

III Applications

(i) Air Fare Regulation Under the Two-Airline Policy

Air fares have been controlled through Air Navigation Regulation 106 which requires the operator of charter or scheduled air services using Commonwealth air facilities to submit proposed fares to the Minister for Transport who approves fares that he considers to be 'fair and reasonable'. There has been a notable lack of public discussion, especially by the regulatory authorities, on how this

\[ \text{[ applications details omitted]} \]
'fair and reasonable' criterion might be interpreted.9

In addition to this general framework provided by the Air Navigation Regulations, the particular details of the Two-Airline Policy also have a significant impact on the setting of air fares charged by TAA and AAA. The most popular rationale for this policy has been to prevent the development of a monopoly in the domestic industry.10 This is reflected in the fundamental objective of the Two-Airline Policy which has been to ensure the continued existence and financial viability of the two major operators. In particular, the rationalization provisions of the policy aimed to 'bring earnings into a proper relation to overall costs'. These provisions required TAA and AAA to consult and resolve differences on a wide range of details of the Two-Airline operations and cost assumptions, would certainly apply for the same increases in air fares.

FAERS charged by the two major domestic airlines (and other air operators) are set so that changes in revenue will allow the recovery of proven changes in costs. Adjustments are made to allow for the under- or over-recovery of costs resulting from previous fare determinations. Thus, if revenue in a period is higher than expected, the airlines are required to absorb a larger proportion of the next round of cost increases. Using Department of Transport (DOT, 1980) terminology, air fares are calculated on an 'annualised aggregate basis'.12 The regulatory procedures seek to merely verify that costs have been incurred. There is no process on the financial and economic performance of the regulated firm and on regulatory procedures and actions generally. For example, in the case of the airlines, the Holcroft Report (1981, p. 3) notes 'serious impediments to the prompt and comprehensive collection of the quantitative data it considered necessary for its analysis'. It suggests that a possible interpretation of the inadequacy of available information might be that 'the regulator and the regulated have a mutual interest in minimising public analysis and discussion of their performance' (p. 27) and it advocates 'as a general principle of public interest, a requirement for as full and frank a public disclosure and scrutiny as practicable' (p. 5).

While a considerable amount of data and information still remains unavailable to the public, the previous vagueness surrounding the mechanics of setting airline fares has fortunately been reduced by the recent Holcroft Inquiry.13

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a Increase over previous financial year.
b Revenue minus costs, i.e. operating profit before income tax.
c Yearly average over sample period.
d Includes AAA and the regional airlines of Amset Transport Industries (ATI).

Sources: TAA Annual Report (various issues), ATI Annual Report on Airline Activities (various issues).

of 'cost justification' or, with one exception, any perception of 'allowable' costs. The only costs which are questioned and disallowed are labour payments which are in excess of those determined through a relevant industrial tribunal.15

Table 1 shows the results in recent years of this approach of adjusting fares so as to match revenue increases with rises in costs.16

15 For example, air fares were reduced by 0.5 per cent in November 1974 to penalize the airlines for 'sweetheart' wage increases for pilots which were above the rates determined by the Flight Crew Officers Tribunal (TAA, 1980, p. 28).

16 There were 12 adjustments to the fare formula from its introduction in August 1974 to the end of June 1980 (Holcroft Report, 1981, p. 165).

The levels of profit implicit in the current fare-setting procedures apparently were established when the air fare approach was first introduced in August 1974.17 Presumably the underlying profitability of these arrangements would have been considered to be 'fair and reasonable' since the revenue implicit in that initial chosen level of fares was agreed to by the airlines and subsequently approved by the authorities. Yet the Holcroft Report (1981) notes that an apparent profit margin of 15% might be 'unrealistic'.

17 Prior to that date fares on individual routes had been developed on an independent 'historical' basis and were each generally increased by a flat percentage rate, again with the aim of increasing total revenues so as to equal changes in an operator's costs.
Report (1981, p. 173) finds little evidence that profitability was subject to scrutiny by the regulatory authorities either then, or since, or that any attempt has been made to interpret the 'fair and reasonable' criterion. It now seems to be recognized by many in the industry that the approach of adjusting air fares to equate movements in revenues and costs can permit cost increases which are higher than necessary and the development and/or maintenance of inefficiency. For instance, TAA (1980, p. 9.13) boldly admits that it is always a possibility in any industry with a potential for monopoly profits to disguise these profits either as excessive wages, salaries and other benefits for staff or as excessive staffing. Other more subtle means for disguising monopoly profits exist.

However, less emphasis has been given to the strong and positive incentive to increase costs so as to capture the potential monopoly rents which is stressed in our analysis.

Several studies of the cost efficiency of the major Australian airlines have suggested that costs are higher than minimum achievable levels. Mackay (1979) and Hocking (1979), two reports which were prepared for the Domestic Air Transport Policy Review of 1978, conclude that the Australian domestic airlines are inefficient and attribute this inefficiency to the system of regulation. The Report of that Review, DOT (1979a), while unable to draw firm conclusions on this issue, admits that there may be scope for TAA and AAA to achieve greater efficiency and recommends increased monitoring of their performance. The Holcroft Report also briefly considers the performance of the two major airlines; its findings regarding cost efficiency are consistent with those noted in previous studies. The possible extent of cost inefficiency is indicated in Kirby (1979, p. 114) who, using the results of Mackay (1979), estimates it to be of the order of 35 per cent of gross industry revenue or $175m in 1976-77.

As suggested above, the need for price regulation in an industry where entry is restricted is generally perceived on the basis of avoiding excessive profits. To alleviate the resulting problems of cost inefficiency, the Holcroft Report urges increased surveillance of the performance of the airlines to ensure that air services are provided at as low a cost as possible. It argues that this requires regulators to do more than merely verify that costs were incurred; they need to examine the real purpose of expenditures and not allow costs beyond a basic or reasonable level. When the regulatory authorities examine costs they should substitute 'reasonable' costs for any which in their opinion are wasteful or not in the interests of the public.18

However, the practical problems associated with such an approach appear overwhelming. In order to have the ability to determine 'reasonable' costs the regulatory authorities must virtually duplicate the managerial functions of the firm. Clearly such detailed oversight of airline operations is a costly strategy. Regulatory authorities are also likely to be lacking incentives to closely monitor costs. Airline regulators should not be considered as an independent public interest oriented group; they too have a personal stake in the industry (e.g., career prospects). Their self-interests will not necessarily coincide with the interests of the community to minimize costs of production. A lack of incentive on the part of DOT to scrutinize airlines' costs is evidenced by the findings of the Holcroft Report (1981, p. 175) that DOT was not asserting its right to be fully informed regarding these matters.20

The application of our model of profit regulation to Australia's Two-Airline Policy has so far ignored the very basis of this policy, i.e., that there

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18 See Kirby (1982) for a critique of this Report.

20 The Holcroft Report attempts to alleviate this incentive deficiency by recommending increased public disclosure of the technical and financial performance of the airlines and greater public accountability of regulatory decisions. However, one must remain a little pessimistic of the prospects of significant improvements in cost efficiency within the existing Two-Airline Policy framework under which calls for increased monitoring and improvement in airline performance have always in the past amounted to little more than 'jawboning'. It would seem very difficult to devise a set of incentives facing the regulatory authorities and the airlines to encourage cost efficiency which would match the effectiveness of those provided by competitive market forces.
are two firms operating within an industry with entry barriers, one being privately owned and the other government owned, and each enjoying roughly half of the available market. While our model of the regulated monopoly is developed within the context of a private firm it can be extended easily to the public-firm case. Assume that the public firm has similar preferences regarding profits and padded expenses to its private counterpart. Assume further that the managers of a government-owned firm are unable to share directly in the profits earned by it and that ownership of this firm, being so diverse, results in no effective direct control by owners on management.21 Under these assumptions the public firm, like the private firm, has an incentive to maximize potential profits by operating at the usual monopoly price/quantity combination; but, unlike the private firm, it has an incentive to extract these resultant rents in the form of cost-padding. Thus, in an industry with both types of firms operating as, for example, under the Two-Airline Policy, the fundamental thrust of our model is maintained. The industry will tend to operate at the monopoly outcome and cost-padding will exist to the extent that the price control frustrates the private firm's dominant profit-taking incentive and accommodates the public firm's dominant cost-padding incentive.

In summary, there is evidence that the control of profits through air fare pricing under the Two-Airline Policy has led to cost inefficiency in the Australian industry. Almost certainly this has increased the deadweight losses from the government's entry restrictions. Clearly, if there is little justification for having these entry restrictions in the first place, the adverse welfare implications of the resultant system of air fare regulation offer further good reason to remove them.22

21 In particular, there is no direct mechanism to require these managers to provide owners with profits. This might be interpreted as an extreme case of the managerial discretion hypothesis of Williamson (1965). See Davies (1971) for an elaboration of the property rights theory of the firm. Note that it is this institutional structure, rather than any differences in tastes and preferences, which provides the essential difference between the public and private firm.

22 See Kirby (1981) for a discussion and rebuttal of many of the common arguments supporting the economic regulation of airlines.

(ii) Regulation of Gas Supply in Sydney

The Australian Gas Light Company (AGL) was established by an Act of Council in New South Wales (NSW) in 1837. It supplies gas in Sydney and other areas in NSW (in some cases through a subsidiary company). Since 1977 AGL has supplied natural gas purchased from a consortium of producers in the Cooper Basin region of South Australia. The gas is transported to Sydney in a pipeline owned by the Pipeline Authority, a Federal government statutory authority.

AGL is unusual in Australia in that it is a rare case of a public utility being operated by a private company. In Australia, public utilities are usually government owned, e.g. the Gas and Fuel Corporation of Victoria (GFC) and the Electricity Commission of NSW (Elcom). AGL can be regarded as a classic case of a privately owned, regulated, public utility monopoly, a form of organization common in the United States.

AGL is regulated by the Energy Authority of NSW under powers set out in the Gas and Electricity Act, 1935 as amended. A complex set of regulations on prices, dividend rates and accumulation of funds in company accounts has the effect of controlling the absolute level of profits. Gas prices are set by a Board of Inquiry and have not been increased since 1975. Standard rates of dividend are specified in the Act with different rates for ordinary and preference shares. The allowable rate for ordinary shares will normally exceed that for preference shares (which is a fixed 5.5 per cent) by a fixed percentage (e.g. 15.1 per cent in 1980). A firm's profits might also be distributed either by capitalization in share values and/or by the free issue of additional shares. Both possibilities seem to be precluded in the case of AGL by restrictions on the size and usage of accounts which the company may accumulate.24

23 Because it competes with other energy sources, especially electricity and fuel oil, AGL does not regard itself as a 'monopoly' (T. G. O'Meally, personal communication). Despite this objection we continue to use this term since AGL has sole rights to the supply of gas in particular markets.

24 For example, AGL is allowed to carry forward amounts in a 'profit and loss account' which may not exceed 12 months' dividend at the standard rates and may be used to pay dividends in any year when profits are insufficient to meet payments at standard rates. AGL has drawn on its Profit and Loss Account in three years since 1968 (in 1970, 1973 and 1975).
As a result of these restrictions we would expect to observe AGL's ordinary shares appreciate at most at the general rate of inflation and that paid-up capital would remain roughly constant. AGL's share prices actually fell in real terms during the 1970s and paid-up capital remained constant until 1979 when share prices also began to rise. In 1979 there was a one-for-eight free issue and an associated one-for-five cash issue. The free issue was accomplished by an accumulation in the Property Realization Account, presumably a fortuitous event. Share prices which had fluctuated around $1.00 to $1.10 throughout the 1970s stood at $1.85 at the end of 1979 and $3.80 one year later. The free share issue in 1979 may have heralded greater optimism about the company's profit potential which was perhaps bolstered by reference in the 1980 Annual Report, to 'the support of the Government in responding to its requests for the lifting of a restriction which has placed unnecessary constraints on the Company's ability to raise funds for working capital and development' (p. 2).

Particularly since the mid-1970s AGL seems to have easily reached the allowable level of profitability so that it is reasonable to assume that potential profits exceed actual profits. The maximum possible dividend payment has been made every year since 1968. With only the three exceptions in the early 1970s, these payments have been made from profits in the particular year. It is also instructive to compare AGL's profit performance with that of GFC. In 1980-81 GFC made a profit of $23.4m (including its compulsory contribution to the Victorian government of $17.7m) or about 18.50 cents per gigajoule of gas sold. AGL's net profit in 1980 was $4.3m or about 7.74 cents per gigajoule.25

The likelihood that AGL has a greater profit potential than it is able to realize does not necessarily mean that it incurs unnecessary costs as our hypothesis would suggest. It may sustain lower prices to consumers such that the regulations are, in fact, successful in their aim of reducing AGL's exercise of monopoly power. To test our hypothesis an investigation of the actual response of AGL to the regulations is required.

In attempting to make an assessment of AGL's response to the regulations we have been unable to gather essential cost data. Even if this numerical information were available, it may still be difficult to make meaningful comparisons with other Australian companies as they too will often be operating within a regulatory environment leading to excessive costs.26

Nevertheless, some information on AGL's advertising is available. AGL advertises heavily with 'the biggest advertising and promotional campaign in the history of gas in Australia' (Annual Report 1979, p. 10). The usual rationale for advertising is to enhance profitability. In view of the restrictions on AGL to distribute further profits, it is difficult to understand why AGL would want to engage in extensive advertising, unless it can gain some benefit from increased potential profits through cost-padding. In 1979, the year the major promotion was launched, AGL paid the maximum allowable dividend and added to its Profit and Loss Account which was then near its maximum at 10.06 months' dividend. Advertising expenditures had already increased fivefold since 1974 (see O'Meally, 1979, p. 7) and, given the profit restrictions and the fact that sales had also recovered so dramatically in this period, it would seem difficult to rationalize a further major campaign.27

Our examination of natural gas supply in Sydney confirms that AGL is subject to regulation which does not allow it to gain directly the potential rents arising from its protected market position and suggests, albeit tentatively, some evidence for the cost-padding hypothesis. Thus an investigation of the desirability of removing the regulatory

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24 Paid-up capital also increased as a result of merger with the Newcastle Gas Company in 1979 and the acquisition of the balance of shares in North Shore Gas Company in 1980.
25 The figures were calculated from data provided in the Annual Report 1981 of GFC and the Annual Report 1980 of AGL. This comparison is only suggestive of AGL's profit potential as there are many factors which could explain this differential, e.g., GFC is able to purchase natural gas from Bass Strait at a considerably lower price than can AGL from the Cooper Basin.
26 For example, many firms produce in industries subject to tariff protection. Corden (1974) has noted that such firms may be led to cost inefficiency if tariffs are set so as to allow non-monopoly levels of profits. In the banking industry regulation seems to have led to the over-provision of many services and excessive staffing (see Swan and Harper, 1981).
27 Sales have increased dramatically since the mid-1970s from approximately 10,000 terajoules of gas in 1976 to about 55,000 in 1980, a growth rate of over 50 per cent per annum. O'Meally (1979) describes this remarkable corporate recovery as 'Operation Lazarus'.

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constraints on AGL's profits and of encouraging entry into this protected market seems warranted.

IV Conclusions

This paper analyzes the impact of profit regulation on a firm in a closed market. Our model suggests that such a firm, when unable to capture these disallowed profits through cost-padding, faces regulatory authorities that might see an increased attention by the regulators to cost control will eliminate this problem.

Our model of the profit-regulated protected monopoly is simple in many respects. For example, little attention is devoted to issues such as: the distribution of the firm's rents among owners, management and staff; the possibility that the regulatory authorities do more than merely verify production costs; and the operation of other constraints on the firm, e.g., distortions resulting from different tax provisions regarding income and surpluses. Nevertheless, the abstraction enables us to emphasize the cost-padding incentives provided by common regulatory procedures which control entry and the level of profits.

In our applications, the Two-Airline Policy and the supply of gas in Sydney, we have been troubled by a lack of information about the way the regulatory process is expedited and by the difficult problem of getting sufficient evidence on cost-padding. Nevertheless, we do have enough information to establish that the conditions for cost-padding do exist in each case and that there is some evidence, of varying strengths, to support the predictions of our analysis.

The basic approach of our model seems to have other potential applications. For example, the standard analysis of the effects of a rent tax requires modification when viewed in the light of the cost-padding hypothesis. It also may be relevant to the study of the behaviour of 'non-profit' organizations. Further, we note that the concept of the 'made-to-measure' tariff can be analyzed with cost-padding behaviour in mind (see Corden, 1974).

Finally, we wish to end on a more polemical note. Where private monopoly is feared, policy makers should endeavour to make certain that such fears are, in fact, well grounded and to place increased reliance on market-oriented policies to prevent the emergence of monopoly pricing behaviour. The alternative response of blocking market entry and controlling prices often seems more likely to ensure that the fears of monopoly are realized.

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PAPER 6 :

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PAPER 7 :

Kirby, M.G. and Albon, R.P.,

"Property Rights, Regulation and Efficiency: A Further Comment on Australia's Two-Airline Policy",
August 1984, submitted to Economic Record.
AIRLINE COSTS AND AUSTRALIA'S DOMESTIC AIR TRANSPORT POLICY: TWO PAPERS

Paper 1: Michael G. Kirby
Paper 2: Michael G. Kirby & Robert P. Albon

DISCUSSION PAPER NO. 112
NOVEMBER 1984
The Centre for Economic Policy Research was established in 1980 as one of a number of University initiatives. It was provided with an annual grant for a period of five years and given a mandate to foster policy oriented studies of the Australian economy. The Centre intends to work closely with other economic research groups - both within the Australian National University and in other Australian universities.

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DISCUSSION PAPER NO. 112

TWO PAPERS:

AIRLINE ECONOMIES OF "SCALE" AND AUSTRALIAN DOMESTIC AIR TRANSPORT POLICY
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PROPERTY RIGHTS, REGULATION AND EFFICIENCY: A FURTHER COMMENT ON AUSTRALIA'S TWO-AIRLINE POLICY
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SUMMARY

Two papers are presented here relating to costs in the airline industry and domestic air transport policy in Australia. In Paper 1 a model of airline total operating costs is developed and estimated. The estimates reveal substantial economies of operation with respect to load factors, aircraft size and stage length, but diseconomies associated with serving more ports and increased departures from a given port. The model is also utilised to simulate various policy alternatives for Australia and to assess their cost implications. The simulation results indicate the existence of substantial potential cost savings in the Australian domestic airline industry. Notable results include: costs in Australia for a particular airline operation appear over 50 per cent higher than the equivalent operation in the USA; there is a small but statistically significant difference in cost efficiency between TAA and Ansett; and parallel scheduling imposes a large burden on industry operating costs.

Paper 2 contributes to the long standing debate on the relative efficiency of public and private firms. It presents an explicit model on firm behaviour under the Two-Airline Policy, which suggests that the government-owned firm will tend to be less cost efficient than its private counterpart. Econometric evidence, based on the cost model reported in Paper 1, indicates that TAA's operating costs are around 5 per cent higher than its private counterpart. However, this difference, while statistically significant, is small compared to the inefficiencies of both operators caused by current policies of economic regulation.
PAPER 1:

AIRLINE ECONOMIES OF "SCALE" AND AUSTRALIAN DOMESTIC AIR TRANSPORT POLICY

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* This paper is a revised version of a paper presented at the Research Workshop in Industrial Organisation, Australian Graduate School of Management, University of New South Wales, 26 May 1982. Most of the research reported in this paper was undertaken while the author was employed at the Australian National University. The opinions expressed in this paper do not necessarily reflect those of the author's current employer.
INTRODUCTION

The question of economies of scale in the airline industry has been an important issue over many years and has featured prominently in debates on regulation of the industry. In Australia, for instance, fear of monopoly development appears to be a popular rationale for its Two-Airline Policy. These debates have revealed sharp differences of opinion on the existence or otherwise of scale economies in the airline industry. Economists have generally tended to reject the claims of many industry representatives that such economies exist.

However, this paper suggests that the issue is clouded by the use of imprecise terminology by both sides of the debate and that much of the apparent conflict is due to differences in interpretation of airline "scale", with the result that the discussion is often at cross purposes. Thus a more systematic approach to the concept of airline scale or output is needed. This paper presents a conceptual framework for analysing an airline's scale of operations, estimates an airline cost function based on this framework, and uses the empirical results to simulate some alternative airline industry policies for Australia and to estimate their cost implications.

2. THE CONCEPT OF "SCALE" IN AIRLINES

Ton-miles performed (TNP) is the traditional measure of airline output or scale. However, TNP is a highly aggregated measure of output and its use ignores the multiproduct nature of an airline company's
output. For example, an airline transports different cargoes (e.g. freight and passenger services, perhaps of varying qualities) over different routes (e.g. over different distances with varying numbers of stops) in different aircraft. Thus the same aggregate output, as measured by TMP, can be produced in many ways with, perhaps, quite different cost implications.

Several previous empirical studies of airline costs attempt to allow for this difficulty by including in their estimated cost functions, in addition to TMP, other variables which are thought to be important influences, e.g. average stage length (ASL), average aircraft size (AAS) and average load factor (ALF). Such variables are often described as environmental factors or output modifiers. Studies adopting this approach often find that, while network structure and technology are statistically significant determinants of unit operating costs, there is little effect through the level of output itself, TMP. Crude observations of a link between scale and unit operating costs are then explained in terms of the collinearity between size of output and the various network and technology variables, e.g. large airlines tend to fly over long stage lengths with large aircraft, rather than a direct causal relationship.

Studies adopting this approach can be criticised for their somewhat ad hoc selection of explanatory variables and for their failure to appreciate that the output modifiers are not merely
correlated with TMP but rather are linked directly to it via the following identity relationship:

$$\text{TMP} = \text{PORTS} \times \text{ASL} \times \text{ALF} \times \text{AAS} \times \text{ADPP}$$  \hspace{1cm} (1)

where PORTS is the number of airports served and ADPP is the average number of departures per port.

Previous empirical cost studies do not take the information contained in this identity to its logical conclusion by failing to include all of the variables which influence the total level of output. Their findings on the impact of TMP can probably be better interpreted then as the effect of the omitted variables or output dimensions. For example, such empirical studies often find that TMP has little impact on average costs when stage length, market density and aircraft size are held constant. This appears then to be a special interpretation of economies of "scale", referring to the geographic duplication of existing networks and operations. On the other hand, the economies of "scale" discussed by many industry representatives probably often refer to the quite different case where the routes operated remain the same but entry or exit from the industry leads to changes in a firm's market density and perhaps choice of aircraft.

In order to account for the multiproduct characteristics of airline services, an output index, Q, is utilized where the output dimensions, QD, which are included in its construction are selected through a systematic breakdown of the aggregate output measure. Thus

$$Q = Q(QD) \hspace{1cm} i = 1, \ldots, 7$$  \hspace{1cm} (2)

where, in addition to the five output dimensions obtained from the right-hand side of equation (1), the index also allows for the
proportion of total output that is passenger traffic (PASS) and that is operated with scheduled services (SCH).

The highly general and flexible translog functional form is specified for the output index. Thus

\[ \ln Q = \sum_{i=1}^{7} \alpha_{i} \ln QD + \sum_{i=1}^{7} \sum_{j=1}^{i} \alpha_{ij} \ln QD \ln QD \]  

(3)

3. A MODEL OF AIRLINE COSTS

3.1 Specification

This paper estimates an airline total cost function which, based on the usual economic theory of the firm, is a relationship between total costs and output and factor prices. Especially in the context of estimating economies of "scale" it is desirable to have a general and flexible functional form. Again the translog specification is used. Thus

\[ \ln TOC = b_{0} + b_{1} \ln Q + b_{2} (\ln Q)^{2} + \sum_{k} b_{k} \ln FP + \sum_{k} \ln Q \ln FP + \sum_{k} \ln Q_{k} \ln FP \]  

(4)

where TOC is the total operating cost of the airline and FP are prices of factors of production.
Substitution of the output index given by equation (3) into this specification and, for simplicity, deletion of terms of higher order than two, yields the following estimating equation after relabelling of parameters:

\[
\ln TOC = a + \sum_{i} a \ln QD + \sum_{i} \sum_{j} a \ln QD \ln QD + \sum_{i} \sum_{j} \sum_{k} a \ln FP + \sum_{k} a \ln FP \ln FP + \sum_{k} \sum_{l} a \ln QD \ln FP
\]

(5)

3.2 Data

There are 145 annual observations of Australia's two major 8 carriers and of eight local service and ten trunk airlines (domestic operations only) from the USA over the eight year period 1971 to 1978. The US data were obtained from various issues of the US Civil Aeronautics Board Handbook of Airline Statistics, Airline Operating Cost and Performance Report, and Annual Report.

The Australian data were obtained from Department of Transport Domestic Air Transport Statistics, Airline Aircraft Utilisation Statistics, and Annual Report; TAA Annual Report and personal communication; ATI Annual Report, and Annual Financial Report on Airline Activities; and IATA World Air Transport Statistics.

Several points can be noted regarding the assembly of this data base. The Australian financial data, which is available only on a financial year basis (1 July to 30 June), was converted to a calendar year basis by taking a two-period moving average. All cost and factor price data have been converted to 1976 prices. Due to data...
unavailability, the fuel price for ATI was assumed to be equal to the fuel price for TAA. Australian data prior to 1976 have been adjusted to convert them to a great circle distance basis. The data for ADPP were obtained for all airlines by residual from equation (1). Finally, strike-affected observations have been deleted from the sample.

In addition, it is interesting to give an impression of the data comparison between the Australian and US carriers. For most variables used in this study the data for the Australian carriers tend to rank between the US trunks and local service operators. In contrast, however, the price of fuel and average load factors are much higher in Australia than in the USA. As well, ATI serves a relatively large number of airports compared with most US carriers. The data also indicate that the price of labour is relatively low for Australian carriers compared with in the USA.

3.3 Empirical Results

Equation (5) was estimated with ordinary least squares using the Shazan econometric program package (White (1978)). Irrelevant variables were then deleted using appropriate F-test procedures. At this stage most of the higher order and cross-product terms, together with time dummy variables which were introduced to allow for the possibility of technological change over the sample period.
were deleted. The following preferred equation was obtained:

\[ \ln TOC = 2.605 + 0.444 \text{AUST} + 0.051 \text{TAA} - 0.035 \text{US77} \]
\[ \quad (4.30) \quad (10.56) \quad (1.75) \quad (-2.39) \]
\[ - 0.060 \text{US78} + 1.041 \ln \text{PORTS} + 0.077 \ln \text{ASL} \]
\[ \quad (-3.55) \quad (7.61) \quad (1.15) \]
\[ + 0.314 \ln \text{ALF} + 0.495 \ln \text{AAS} + 1.044 \ln \text{ADPP} \]
\[ \quad (4.94) \quad (12.15) \quad (6.51) \]
\[ + 0.517 \ln \text{PASS} + 0.286 \ln \text{SCH} + 0.242 \ln \text{FPL} \]
\[ \quad (4.72) \quad (2.68) \quad (1.90) \]
\[ + 0.133 \ln \text{FPF} \quad R = 0.998 \quad \text{SER} = 0.048 \quad (6.56) \]

where, in addition to previously defined variables, AUST is a dummy variable for the two Australian airlines; TAA is a dummy variable for TAA; US77 and US78 are dummy variables to capture the effects of airline deregulation in the USA during 1977 and 1978, respectively; FPL is the factor price of labour; FPF is the factor price of fuel; SER is the standard error of residuals of the estimated equation; and t-ratios are in brackets.

This equation performs well from an econometric viewpoint. All the variables are of correct signs and plausible magnitudes, and statistically very significant. The equation explains a large proportion of the total sample variation of the dependent variable. In addition, asymptotic LM tests performed by the econometric program suggest that the assumptions of normality and homoscedasticity of the residuals cannot be rejected. The standard error of residuals gives an indication of the model’s predictive ability by suggesting
a two-standard error range for an airline's actual total operating costs of plus or minus 10 per cent around the estimated value. This paper is particularly interested in the Australian carriers. All their estimates, except TAA (1973 and 1974), are within five per cent of their actual sample observations.

A more demanding test of the model is its ability to forecast outside the sample observations. Equation (5) was reestimated over the period 1971 to 1976 and used to forecast total operating costs for the Australian carriers for the next three years. The results of this test are shown in Table 1. The 1971 observation on the US local service operator Allegheny (AL) was deleted from the estimation sample because of data deficiency which was subsequently corrected. The model performs well at forecasting outside the sample observations in this test.

Table 2 contains the estimates of cost elasticities with respect to various output dimensions. All these elasticities are significantly different from unity. The elasticity of ASL has been evaluated at 370 miles, which is around the length prevalent in Australia. As expected, the model suggests substantial economies of operation with respect to load factors, aircraft size and stage length. Clearly, once a flight is being undertaken, the marginal cost of additional passengers is very small. Economies of aircraft size result from aerodynamic advantages and lower proportionate drag, as well as a higher ratio of payload to total weight (Strazheim (1969)). Economies of stage length arise as the relatively fixed costs of takeoff, climbing to cruise and landing are spread over
longer flight distances. However, this effect occurs only up to the design range of the aircraft in operation. After a certain distance, payload must decrease (Douglas and Miller (1974)). This effect is captured by equation (6), in which the estimated cost elasticity with respect to ASL increases as ASL increases.

In contrast, the estimated model suggests that there are diseconomies associated with serving more ports and operating more flights from a given port. This last finding is quite strong and exerts a significant influence on the simulation results of the following section. This diseconomy most likely arises from increased airside congestion at busier airports, i.e., the extra time spent taxiing and awaiting landing. Thus while ADPP is a component of market density (which can be defined as the product of the last three variables on the right-hand side of equation (1)), it seems clear that the cost advantages of dense markets result from the scope they provide to operate large aircraft at relatively high load factors, rather than merely the opportunity to make more flights.

Of interest to many is the question of the impact on costs of changing the composition of an airline's output, while keeping total output constant and operating over the same network structure. For example, a firm could produce the same output by operating fewer flights at a higher average load factor. Clearly, an infinite number of possibilities exist. However, three cases are shown for illustration in Table 3. Thus, if ALF were to rise and its rise offset by a fall in ADPP so that total output remained unchanged, then total operating costs would fall by 77.0 per cent of the initial percentage change in ALF. The model clearly suggests that operating
costs are lowered by flying large aircraft, relatively full and relatively infrequently. In addition, Table 3 reveals that passenger traffic and scheduled services are more expensive to provide than their alternatives.

4. SIMULATION OF SOME AUSTRALIAN POLICY ALTERNATIVES

The appropriate policy for Australia's airline industry has been the subject of considerable debate in recent years. This section uses the framework and estimated model from above to simulate some of the policy alternatives and to assess their cost implications.

4.1 US System Cost Incentives

The Australian system of setting air fares in which prices are adjusted so that changes in revenue offset any changes in costs, i.e. regulation of the level of profit, appears to provide strong incentives and ample scope for cost inefficiency (see Albion and Kirkman (1983)). Such opportunities are not as readily available in the US industry. Prior to deregulation fares were determined by rate of return regulation, where costs for regulatory purposes were taken to be an industry-wide average. The US regulatory framework at that time provided much greater scope for non-price competition, e.g. through frequency of service and aircraft type, which lessens the ability to engage in cost-padding practices. The larger number of carriers and the greater diversity of networks also rendered more difficult the collusion (in fact or otherwise) necessary to extract potential monopoly rents through cost-padding. In addition, taking averages
of industry costs provided each individual airline with greater incentive to perform better than average and so reap extra profits.

This discussion suggests then that the Australian system of airline regulation is likely to result in a greater degree of cost inefficiency than its US counterpart. The estimated parameter of the dummy variable for Australian carriers implies that costs in Australia for a particular airline operation are 55.9 per cent higher than the equivalent operation in the USA. Part of this observed difference might be explained by omitted variables or differences in measurement of included variables. For example, some relevant output dimensions may not be included in the output index, e.g. safety and other operating standards or in-flight service, and the cost of capital has been omitted from the estimated model (for data availability reasons). In addition, another often quoted explanation for the existence of some difference is the distance in location of the Australian carriers from the manufacturers of their aircraft, necessitating the holding of larger inventories of spare parts. However, it is felt unlikely that these considerations would substantially reduce the order of magnitude of the estimated cost differences between the Australian and US airlines.

Equation (6) also sheds some light on the impact of deregulation in the US airline industry. The US-specific time dummy variables indicate that total operating costs of existing carriers were 3.4 per cent and 5.8 per cent lower in 1977 and 1978 respectively, the first two years of deregulation, than in previous years. This structural break was not detected with respect
to the Australian airlines and indicates the likelihood of even further improvement in cost efficiency from more open market conditions.

4.2 Privatise TAA

It can be argued on theoretical grounds that government-owned enterprises are likely to be less efficient than their privately-owned counterparts. The Australian Two-Airline Policy is a well known case study (see Davies (1971) and Kirby and Albon (1984)). Hence calls are sometimes made to return TAA to the private sector.

An estimate of the impact of government ownership on airline costs was obtained by the inclusion of a dummy variable for TAA. The estimated coefficient of the TAA dummy variable is 0.051 which implies that TAA's costs are 5.2 per cent higher than those of its private counterpart, ATI. Furthermore, the t-ratio is 1.75 which is significant in a one-tailed test at a 95 per cent level of confidence, so that there is only 5 per cent level of confidence that the actual cost difference is zero. This estimate, while providing some further empirical support for Davies' hypothesis, also supports the view that the difference in cost efficiency between TAA and ATI is relatively small in magnitude compared with the cost inefficiencies of both operators induced by the Australian regulator policies.

4.3 One-Airline Policy

Some commentators argue that a monopoly airline would more fully capture economies of scale and hence lower the total cost to the community of the provision of airline services. A "crude" interpretation of the One-Airline Policy is to merge the operations
of ATI and TAA. This policy would result in all of Australia’s domestic airline operations, except those of the independent regional carrier East-West Airlines, being undertaken by a single company. It is assumed that this company will operate the same aircraft and services over the current networks. For the simulation exercise its total output is taken to be the sum of the outputs of the separate ATI and TAA operations. All output dimensions, except ADPP, and factor prices of the simulated operation are taken as the total output weighted averages of their ATI and TAA counterparts.

ADPP for the simulated operation is calculated as a residual from the identity given by equation (1).

Over the three year period 1974-1976 the total costs of this policy are estimated to be $1834m (Item 7, Table 4), compared with the model’s estimate of $1804m under the existing Two-Airline Policy (Item 6), i.e. costs would be 1.7 per cent or $10m per annum higher under this interpretation of the One-Airline Policy.

The Two-Airline Policy relates more directly to Ansett Airlines of Australia (AAA) than to the total operations of ATI, which also includes the activities of its regional carriers. Using data for AAA’s operations its total operating costs can be estimated (Item 8) and hence the total industry costs as the sum of those of AAA and TAA (Item 10).

An "exact" interpretation of a One-Airline Policy then involves the merging of AAA’s and TAA’s activities, again assuming the same networks, aircraft and services. Item 11 shows that the three year total cost of such a policy would be $1647m, which is 2.2 per cent
or $12m per annum higher than costs under the current policy (Item 10).

Particular concern is often shown for the major trunk routes over which both AAA and TAA operate and where the Two Airline Policy has its most obvious effects. By adjusting the data for the regional or "non competitive" activities of AAA and TAA, the model can estimate their cost of operations on the "competitive" route network (Items 13 and 14), and hence the total industry cost of airline services on these trunk routes (Item 15).

Then an even "more exact" interpretation of the One Airline Policy would involve the merging of the competitive route activities of AAA and TAA. The estimate of total costs of such a policy over 1974-1976 is $1670m (Item 16), i.e. 3.2 per cent or $17m per annum higher than the current policy (Item 13).

4.4 Three Airline Policy

A Three Airline Policy is sometimes advocated as a means of increasing competition within the Australian airline industry. This policy can be interpreted as the introduction of a third airline over the trunk network of AAA and TAA. Assume that there is an equal division of the total industry output and that the output dimensions of the new entrant are output weighted averages of the existing two, i.e. in particular, it will operate similar sized aircraft. Total industry costs under this policy are estimated to be $1523m over the three years to 1976 (Item 17), which is 5.9 per cent or $32m per annum lower than corresponding costs under the Two Airline Policy (Item 15).
4.5 "Creamskimmer Airlines (CSA)"

Consider the impact of the introduction of a creamskimming airline operation on the networks of AAA and TAA. Assume that the new entrant operates on the following major routes: Melbourne to Adelaide, Sydney and Brisbane, and Sydney to Adelaide and Brisbane. Assume that after its introduction current traffic is shared equally by the three airlines on these major routes and that the output dimensions and factor prices of CSA are output weighted averages of those of AAA and TAA on these routes. Then over the three years 1974-1976 the total cost of serving the AAA and TAA networks is $1601m (Item 12), i.e. 0.7 per cent or $4m per annum lower than under the current policy (Item 10).

4.6 Abolition of Parallel Schedules

Parallel departures of flights by AAA and TAA are a cost of the Two Airline Policy. We can use the model to estimate the cost savings which might occur when these services are deparallelled. Assume that each operator can, for currently parallel flights, half the number of departures and double the size of the aircraft. Then, given data on the proportion of flights in parallel, we can adjust the data to obtain simulated airlines with less ADPP and larger AAS (Items 18 and 19). It is estimated that the total cost of serving the competitive network in this manner is $1293m (Item 20), which is 20.1 per cent or $108m per annum lower than the cost of doing so under the Two Airline Policy (Item 15).
The coordination necessary to achieve these significant cost savings has not been forthcoming under Two-Airline Policy. However, it could presumably become possible if the two operators were merged. So consider the merging of AAA's and TAA's competitive services where the new company deparsels existing parallel flights by doubling aircraft size and halving the number of departures. This probably represents many industry representatives' interpretation of the One-Airline Policy. In this case the total costs of operation are estimated to be $1336m (Item 21) over the three year period, i.e. 17.4 per cent or $94m per annum lower than currently (Item 15).

4.7 Concluding Remarks

All the policy simulations assume that total industry output remains unchanged, that cost changes arise merely because of changes in output dimensions of the simulated system, and that cost efficiency incentives are unaltered. Thus the findings should be used with caution as a guide to policy recommendations.

For example, a more relaxed approach to market entry which permits the establishment of a "Creamskimmer Airlines" may decrease the scope for cost inefficiency, so that some of the difference between US and Australian carriers may be regained. Thus the cost savings from such a policy may be much greater than those suggested by the present simulation results alone. On the other hand, other policies which indicate relatively large reductions in costs, e.g., deparselling schedules within a One-Airline Policy, appear to
offer little added incentive to cost efficiency and may even diminish such incentives. The apparent existence of such large potential cost savings can be taken as evidence of substantial regulatory failure at the present and perhaps argues against further regulatory intervention and for the greater adoption of market-oriented policies.

5. CONCLUSION

This paper presents a further econometric study of airline costs. However, it contains several advances over many previous studies. Firstly, it utilises all the available information regarding the multiproduct nature of an airline's aggregate output, as given by the identity relationship of equation (1). Secondly, it takes account of this information by the construction of an output index. Thirdly, the use of this index within the framework of the highly general and flexible translog cost function specification ensures a well specified and less ad hoc estimating equation. Finally, a large and high quality data base is available for estimation.

The empirical results are satisfactory from an econometric viewpoint. The estimated model has high explanatory power, together with statistically significant and plausible coefficient estimates. These estimates reveal substantial economies of operation with respect to load factors, aircraft size and stage length, but diseconomies associated with serving more ports and increased departures from a given port.

The model can also be used for simulation purposes to examine the cost implications of various policy alternatives. The simulation results, while they must be used with caution, indicate the existence of substantial potential cost savings in the Australian domestic airline industry.
TABLE 1
Forecasting ability of estimated cost model

<table>
<thead>
<tr>
<th>Observation</th>
<th>Actual (A)</th>
<th>Forecast (F)</th>
<th>F/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL (1971)</td>
<td>239.37</td>
<td>247.39</td>
<td>1.03</td>
</tr>
<tr>
<td>ATI (1977)</td>
<td>311.10</td>
<td>321.68</td>
<td>1.03</td>
</tr>
<tr>
<td>TAA (1977)</td>
<td>253.03</td>
<td>263.19</td>
<td>1.04</td>
</tr>
<tr>
<td>ATI (1978)</td>
<td>339.95</td>
<td>357.21</td>
<td>1.05</td>
</tr>
<tr>
<td>TAA (1978)</td>
<td>282.62</td>
<td>289.05</td>
<td>1.02</td>
</tr>
<tr>
<td>ATI (1979)</td>
<td>347.46</td>
<td>371.61</td>
<td>1.07</td>
</tr>
<tr>
<td>TAA (1979)</td>
<td>294.46</td>
<td>305.60</td>
<td>1.04</td>
</tr>
</tbody>
</table>

TABLE 2
Cost elasticity with respect to selected output dimensions

<table>
<thead>
<tr>
<th>Output dimensions</th>
<th>Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PORTS</td>
<td>1.041</td>
</tr>
<tr>
<td>ASL(a)</td>
<td>0.911</td>
</tr>
<tr>
<td>ALF</td>
<td>0.314</td>
</tr>
<tr>
<td>AAS</td>
<td>0.495</td>
</tr>
<tr>
<td>ABPP</td>
<td>1.084</td>
</tr>
</tbody>
</table>

(a) Evaluated at 370 miles.
### Table 3

Cost elasticity with respect to changed composition of output

<table>
<thead>
<tr>
<th>Output dimension</th>
<th>Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial</strong></td>
<td><strong>Offsetting</strong></td>
</tr>
<tr>
<td>ALF</td>
<td>ALPF</td>
</tr>
<tr>
<td>ALF</td>
<td>AAS</td>
</tr>
<tr>
<td>AAS</td>
<td>ALPF</td>
</tr>
<tr>
<td>PASS</td>
<td>n.a.</td>
</tr>
<tr>
<td>SCH</td>
<td>n.a.</td>
</tr>
</tbody>
</table>
### TABLE 4

Simulation of various Australian policy alternatives

<table>
<thead>
<tr>
<th>Observation/Policy</th>
<th>1974</th>
<th>1975</th>
<th>1976</th>
<th>Period Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ATI(A)</td>
<td>333.96</td>
<td>328.05</td>
<td>323.55</td>
<td>985.56</td>
</tr>
<tr>
<td>2. ATI(F)</td>
<td>327.08</td>
<td>343.61</td>
<td>311.26</td>
<td>981.97</td>
</tr>
<tr>
<td>3. TAA(A)</td>
<td>280.17</td>
<td>273.18</td>
<td>265.05</td>
<td>818.30</td>
</tr>
<tr>
<td>4. TAA(F)</td>
<td>274.76</td>
<td>287.75</td>
<td>259.07</td>
<td>821.58</td>
</tr>
<tr>
<td>5. ATI(A) + TAA(A)</td>
<td>614.13</td>
<td>601.23</td>
<td>588.60</td>
<td>1803.96</td>
</tr>
<tr>
<td>6. ATI(E) + TAA(E)</td>
<td>601.84</td>
<td>631.36</td>
<td>570.35</td>
<td>1803.55</td>
</tr>
<tr>
<td>7. One-Airline Policy: Crude(S)</td>
<td>610.99</td>
<td>642.76</td>
<td>579.79</td>
<td>1833.54</td>
</tr>
<tr>
<td>8. AAA(S)</td>
<td>264.10</td>
<td>276.12</td>
<td>249.91</td>
<td>780.13</td>
</tr>
<tr>
<td>9. AAA(S) + TAA(A)</td>
<td>544.27</td>
<td>549.30</td>
<td>514.96</td>
<td>1608.53</td>
</tr>
<tr>
<td>10. AAA(S) + TAA(E)</td>
<td>538.86</td>
<td>563.87</td>
<td>508.98</td>
<td>1611.71</td>
</tr>
<tr>
<td>11. One-Airline Policy: Exact(S)</td>
<td>554.76</td>
<td>574.32</td>
<td>517.51</td>
<td>1646.59</td>
</tr>
<tr>
<td>12. &quot;Creamskinner Airlines&quot;(S)</td>
<td>534.84</td>
<td>560.40</td>
<td>505.57</td>
<td>1600.81</td>
</tr>
<tr>
<td>13. AAA: Trunk Routes(S)</td>
<td>263.71</td>
<td>276.35</td>
<td>250.41</td>
<td>790.47</td>
</tr>
<tr>
<td>14. TAA: Trunk Routes(S)</td>
<td>278.73</td>
<td>291.11</td>
<td>257.61</td>
<td>827.45</td>
</tr>
<tr>
<td>15. AAA: TR(S) + TAA: TR(S) (13 + 14)</td>
<td>542.44</td>
<td>567.46</td>
<td>508.02</td>
<td>1617.92</td>
</tr>
<tr>
<td>16. One-Airline Policy: More Exact(S)</td>
<td>559.96</td>
<td>584.98</td>
<td>525.64</td>
<td>1699.58</td>
</tr>
<tr>
<td>17. Three-Airline Policy(S)</td>
<td>510.24</td>
<td>533.14</td>
<td>479.39</td>
<td>1522.77</td>
</tr>
<tr>
<td>18. AAA: TR,Deparalled(S)</td>
<td>215.49</td>
<td>229.08</td>
<td>186.24</td>
<td>630.81</td>
</tr>
<tr>
<td>19. TAA: TR,Deparalled(S)</td>
<td>228.53</td>
<td>240.94</td>
<td>192.24</td>
<td>661.71</td>
</tr>
<tr>
<td>20. AAA: TR,Dep.(S) + TAA: TR, Dep.(S)</td>
<td>444.02</td>
<td>470.02</td>
<td>378.48</td>
<td>1292.52</td>
</tr>
<tr>
<td>21. One-Airline Policy: More Exact,Dep.(S)</td>
<td>458.61</td>
<td>465.74</td>
<td>391.66</td>
<td>1336.01</td>
</tr>
</tbody>
</table>

FOOTNOTES

1. This paper is a revised version of a paper presented at the Research Workshop in Industrial Organisation, Australian Graduate School of Management, University of New South Wales, 26 May 1982. Most of the research reported in this paper was undertaken while the author was employed at the Australian National University. The opinions expressed in this paper do not necessarily reflect those of the author's current employer.

2. See Kirby (1979) for a discussion of this policy and Kirby (1981, Ch. 2) on the monopoly issue.

3. From a survey of several studies, White (1979, p. 564) concludes that "economies of scale are negligible or non-existent at the overall firm level".

4. See Kirby (1979) for a discussion of this policy and Kirby (1981, Ch. 2) on the monopoly issue.

5. From a survey of several studies, White (1979, p. 564) concludes that "economies of scale are negligible or non-existent at the overall firm level".

6. There is some discussion in the literature as to whether this measure or ton-miles available (TMA) is to be preferred. It is sometimes argued that the bulk of the costs of airline operations are more directly related to the provision of capacity rather than the amount of traffic carried, and that the use of TMA confounds a carrier's ability to sell with its ability to produce. However, choice of the latter involves a somewhat forced or artificial split of an airline firm's activities, with all the associated problems of allocating joint and common costs, and is especially not to be preferred when trying to analyse total operating costs (TOC), as in this paper. Furthermore, the approach adopted in this paper explicitly takes account of an airline's load factor.
5. This is a modified form of an identity presented in Sarndal and Statton (1973).
6. Spady and Friedlaender (1976) construct a similar index. However, they do not take advantage of the identity relationship between total output and its various components and hence their choice of output dimensions remains ad hoc.
7. See Christensen and Greene (1976) for a useful summary of the economic theory of the firm relating to the use of the translog cost function and an empirical application.
8. Trans-Australia Airlines (TAA), a government-owned carrier, and Ansett Transport Industries (ATI), consisting of the major trunk operator Ansett Airlines of Australia (AAA) and several regional operators.
10. American, Braniff, Continental, Delta, Eastern, National, Northwest, Transworld, United and Western.
11. The actual difference is likely to be less than 41.2 per cent with only one per cent confidence.
13. These data understate the impact on operating costs in the industry since they take factor prices, notably that of labour, as given. A feature of the deregulated US industry has been the emergence of new operators with a much lower labour cost structure. Further cost savings can be expected over time as carriers continue to rationalise their route networks.

14. For the simulation exercises here and below, where the purpose is to assess the impact on costs of regulatory policies which affect output dimensions within the industry, it is preferable to compare the simulation results with the model's estimates of costs under the current policy, not with the actual observed costs under the current policy. A comparison with the latter data would seem to confound policy effects with the model's prediction error.

15. Mackay (1979) notes that his results imply that costs under a One Airline Policy would fall by 4 per cent and increase by 2.5 per cent under a Three Airline Policy. However, it is difficult to interpret and hence reconcile these results as his specification fails to fully account for all the relevant output dimensions and data limitations necessitate the use of proxy variables.

16. Gannon (1979) finds that the proportion of flights on selected competitive routes that were considered to be in parallel for December of 1974, 1975 and 1976 was 57.7 per cent, 54.8 per cent and 78.7 per cent respectively.

17. Forsyth (1981) estimates a cost penalty of 5 to 10 per cent from parallel scheduling. However, his specification and simulation method differ from this paper.
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PAPER 2:
PROPERTY RIGHTS, REGULATION AND EFFICIENCY: A FURTHER COMMENT ON AUSTRALIA'S TWO-AIRLINE POLICY

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Australian National University

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PROPERTY RIGHTS, REGULATION AND EFFICIENCY: A FURTHER COMMENT ON AUSTRALIA'S TWO-AIRLINE POLICY

1. Introduction

The relative efficiency of public and private firms has been a long-standing issue in the property rights literature and Australia's Two-Airline Policy is one of the few applied case studies on the topic. Davies (1971, 1977) uses labour productivity measures to argue that TAA is less efficient than its private counterpart, thus supporting his general thesis regarding the effects of property rights on economic performance. However, his analysis has not gone unchallenged. The recently published exchange between Forsyth and Hocking (1980) and Davies (1980) is typical of the debate. In fact, the criticisms have been such that accepted opinion, as represented in a recent survey on public and private enterprise, is that 'the major conclusion that can be drawn from the case of Australian airlines is ... that ... there is no significant evidence that productivity is lower in public firms than private firms' (Millward and Parker, 1982, p. 239).

However, it is our contention that the debate on the relative efficiency of public and private firms within Australia's Two-Airline Policy presently suffers two serious deficiencies. Firstly, no explicit model of firm behaviour under the Two-Airline Policy has been developed. Thus it is difficult to assess the claim, put forward by both Forsyth and Hocking (1980) and Jordan (1981), that the regulatory environment constrains the two operators to a similar economic performance. Secondly, inadequate empirical techniques have been used to address the question of relative efficiency. This note corrects these two deficiencies and, in doing so, provides evidence to challenge the apparent conventional wisdom regarding the case of Australia's domestic airlines.

2. A Model of Firm Behaviour under the Two-Airline Policy

Albon and Kirby (1983) examine the case of a private firm operating in an industry where entry is effectively prohibited by the State, giving rise to potential monopoly profits, $\pi_m$. That model assumes that the
regulatory authorities set prices so that the regulated firm earns a chosen level of profits, \( \pi_r \); that the firm's costs are merely verified, not justified, by the regulators; and that the firm's utility function, \( U(v, CI) \), depends on profits and cost inefficiency such that \( \pi_r > U_{CI} > 0 \). In this regulatory environment the firm has an incentive to capture the remaining potential monopoly profits, \( \pi_m - \pi_r \), through padding its costs of production. The result of this behaviour can be seen in Figure 1, which shows the firm's regulatory profit constraint, its possible trade-off between profits and cost inefficiency and its preferences between these. The utility maximising firm chooses to operate at point B where its costs are padded by D dollars. At B the firm (and society) is worse off by AE than it is at the unconstrained monopoly optimum, point A.

With the aid of a simple characterisation of a government-owned firm this analysis can be readily extended to the case of a regulated public monopoly and then to that of the Two-Airline Policy framework. Assume that the public firm has an identical utility function to its private counterpart. Assume further that the managers of the public firm are unable to directly share in the profits earned by it and that there is no effective direct control on management. Under these assumptions the public firm, like the private firm, has an incentive to maximise potential profits by operating at the usual monopoly outcome. However, unlike the private firm, it has an incentive to extract all of the potential monopoly profits, \( \pi_m' \), as cost-padding, with an associated deadweight loss of AF. If the regulatory authorities set prices so as to achieve a target level of profits, \( \pi_r' \), this public firm is constrained to point B, where management suffers a loss of FG compared with its unconstrained behaviour (point C). However, government revenue increases by \( \pi_r' \), so that deadweight costs to society are reduced by \( (\pi_m' - FG) \). These efficiency gains are simply due to less profits being dissipated as cost-padding.

It can be noted that profit regulation of both the privately-owned and government-owned monopoly firm leads each to the same point B on Figure 1 with identical costs (assuming an effective cost verification procedure). However, at that position, they each face opposite incentives with respect to cost inefficiency.
However, this divergence of incentives, combined with the requirement that both firms charge the same prices, complicates profit regulation in an industry where both types of firm operate together, such as under the Two-Airline Policy. If prices are set on the basis of the private firm's costs, the profit constraint binds it to point B on Figure 1. The government-owned firm, in the absence of further constraints (e.g. the threat of a change in management if it performs noticeably worse than its private competitor), would then choose to operate at point C with the maximum possible degree of cost-padding. The efficiency costs of this strategy include AE plus the costs of government ownership, AF (in addition to the usual deadweight loss associated with the monopoly price/quantity outcome). On the other hand, if the costs of the government firm are used as the benchmark for setting prices, the profit constraint binds it to B. In contrast, the private firm, in the absence of further constraints (e.g. the threat of abolition of entry restrictions if it performs significantly better than its competitor), would have an incentive to minimise cost-padding and operate at point A, where it takes out its share of the monopoly profits directly. The efficiency costs of this strategy, compared to the unconstrained monopoly position, include AG less \( \pi_f \), which is \( (AE + \pi_f - FG) \) less than under the previous pricing strategy. This analysis then suggests the perhaps somewhat counter-intuitive result that the deadweight losses to the community from attempting to regulate profits in entry-restricted industries can be lessened if the high-cost firm is used as the standard for costs.

However, for our present purpose, it can be noted that, in our model, regardless of which firm is used as the cost benchmark for pricing purposes, the government-owned firm will tend to be less cost efficient than its private counterpart. The extent to which this tendency is realised is an empirical question and the subject of the following section.

3. An Econometric Test of Relative Cost Efficiency

Davies (1971, 1977) utilises labour productivity ratios to assess the relative efficiency of TAA and its private counterpart, ATI. While this procedure has intuitive appeal and the advantage of simplicity, there are
Several reasons for caution in its use. Since each partial productivity measure captures only a particular facet of a firm’s operations, no single ratio is adequate and one really needs to consider a wide range of such ratios. Any particular ratio also ignores the impact of other production inputs. Thus observed differences or changes in partial productivity may be due to factor substitution, technical progress or higher quality inputs. Finally, firms often operate in quite different environments — e.g. different outputs, qualities, factor prices, climate and geography — which can affect the measurement of productivity ratios.

While Forsyth and Hocking (1980) are well aware of the difficulties with the use of partial productivity ratios, the debate between themselves and Davies (1980) still relies exclusively upon the use of such ratios. It thus faces the danger of becoming little more than a succession of conflicting opinions as to the significance or otherwise of various productivity differences after essentially subjective assessments of the impact of other influencing factors. Clearly, it would be more desirable to utilise a technique which is capable of explicitly allowing for any differences in operating conditions and which provides statistical assessments of the impact of such conditions and of relative efficiency.

Kirby (1984) estimates an econometric model of airline costs. This model explains the total operating costs of the two major Australian airlines and 18 US local service and trunk airlines over the period 1971 to 1978 in terms of their operating environment (e.g. number of ports served, average stage length, load factors, aircraft size) and factor prices. Furthermore, assuming fixed effects, differences in performance by the Australian airlines and TAA can be estimated with the use of dummy variables. The preferred estimated equation is:

\[ \ln(TOC) = 2.905 + 0.444 \ln\text{AUST} + 0.051 \ln\text{TAA} - 0.035 \ln\text{US77} \]

\[ + 0.060 (\ln\text{US78}) + 1.041 \ln\text{PORTS} + 0.077 (\ln\text{ASL})^2 \]

\[ - 0.035 \ln\text{ALP} + 0.495 \ln\text{AAS} + 1.084 \ln\text{ADPP} \]

\( t \)-values in parentheses.

\( R^2 = 0.930 \)
where TOC is the total operating cost of each airline; AUST is a dummy variable for the two Australian airlines; TAA is a dummy variable for TAA; US77 and US78 are dummy variables to capture the effects of airline deregulation in the US during 1977 and 1978, respectively; PORTS is the number of airports served; ASL is average stage length; ALF is average load factor; AAS is average aircraft size; ADPP is average number of departures per port; PASS and SCH are the proportions of total output that is passenger traffic and is with scheduled services, respectively; FPL is the factor price of labour; and FPF is the factor price of fuel.

The estimated coefficient of the TAA dummy variable implies that TAA's operating costs are 5.2 per cent higher than those of ATI. Furthermore, this estimate is significantly different from zero in a one-tailed test at a 95 per cent level of confidence. Thus this econometric analysis suggests that there is a significant difference in cost efficiency between TAA and ATI.5

Note also that there is a very much larger difference in the cost efficiency of the Australian operators compared with the US carriers—Australian airline costs appear to be of the order of 55 per cent higher than for equivalent operations in the US.

4. Conclusions

In this note we use a model of profit regulation under the Two-Airline Policy to show that there is a tendency for the government-owned firm to be less cost efficient than the private one. In addition, we present econometric evidence that a significant difference in cost efficiency does exist. Our analysis and evidence is contrary to what currently appears to be a widely accepted view. However, this result, while in our view
important, should be kept in perspective. The conclusion of Kirby (1981, pp. 45) appears to be still valid: 'while there appears to be some theoretical and empirical evidence that the state firm is less efficient than the private one, this difference is likely to be small compared with some inefficiencies of both operators which are due to the current policies of economic regulation.'
FOOTNOTES

1. Other case studies include Canadian railroads (Caves and Christensen, 1980) and US municipal water utilities (Feigenbaum and Teeples, 1983).

2. Jordan (1981) also argues that ownership appears to have had little effect on airline performance in Australia.

3. Assuming identical preferences and equal market shares we can continue to use Figure 1, where $A$ should now be interpreted as $m^2$, to show the behaviour of both firms.

4. The data in Table 1 of Albon and Kirby (1983) suggest that past air fare adjustments have, in fact, been based on the costs of TAA.

5. An earlier, although relatively less sophisticated, econometric study by Mackay (1979) has implications for the relative efficiency of TAA and ATI. His results, which have been neglected by both Davies and Forsyth and Hocking, also suggest that TAA performed slightly worse than ATI.

Further evidence to support the hypothesis that the public firm will be less cost efficient is provided by the data in Table 1 of Albon and Kirby (1983). That data shows that over the period 1974-75 to 1979-80, despite the regulatory controls, ATI was able to increase its profits by $18.6m compared with only $1.8m for TAA.
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PAPER 8:

"A Critical Examination of the Domestic Air Transport Policy Review",
A CRITICAL EXAMINATION OF THE DOMESTIC AIR TRANSPORT POLICY REVIEW* 

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I. INTRODUCTION

On 3 July 1977 Peter Nixon, the Federal Minister for Transport (1975-79), announced that a review was to be undertaken of Australia's domestic air transport policy. The Minister noted that this review was one of a series in the transport field and related its timing to the expiry of the Airlines Agreements Act 1973 in June 1978 and the provision, contained in the previous Airlines Agreements, for termination with five years' notice after December 1977. The terms of reference were given as:

To review the principles and administration of Australia's domestic air transport policy.

Having regard to
— the public interest
— existing government policy
— the relationship of air transport with other forms of transport,
— [termination conditions of the various Airlines Agreements]
— other appropriate factors

report on desirable changes to policy, legislation and/or administration designed to improve air transport within Australia, including commuter transport but excluding other General Aviation facets.

The review was carried out by officers from the Department of Transport, assisted by two academic consultants. The report of the Review Committee, Department of Transport [1], consists of two parts. The first, completed in March 1978, deals with trunk route services and the Two-Airline Policy, while the second part, which was finalised in September 1978, considers regional and local commuter air services. Very broadly, the report contains a description of the industry's structure and regulatory framework, an assessment of its economic performance and recommendations for policy reform.

The Report of the Domestic Air Transport Policy Review has been given considerable authority during public discussions of recent aviation policy initiatives

*This paper is a revised version of Kirby [6]. I wish to thank Peter Swan, Keith Mackay, Christopher Hackett, Robert Albon and an anonymous referee for their helpful comments.

1See Kirby [7, 8] for brief descriptions of the legislative arrangements for regulating domestic air transport in Australia.

2For example, see the Second Reading Speech by the Minister for Transport of the Australian National Airlines Amendment Act, Commonwealth of Australia, Parliamentary Debates, House of Representatives, 18 September 1980.
and these initiatives have been consistent with the overall thrust of the Report. In view of its apparent impact and the paucity of published economic analysis currently available on it\(^3\), it would seem useful to carefully scrutinise this Report.

II. THE REVIEW'S ASSESSMENT OF INDUSTRY PERFORMANCE

Most of the Review's assessment efforts are directed towards the major trunk route airlines since it concludes that there is insufficient statistical information available to permit a comprehensive evaluation of the costs, performance and fares of the regional and local/commuter operators [1, p. 192]. In its study of the economic efficiency of the two major operators the Review examines both technical and allocative efficiency.

Two reports prepared for the Review Committee conclude that the Australian domestic airlines are technically inefficient and attribute this performance to the system of regulation.\(^4\) Both these studies utilise partial productivity analysis, while Mackay [9] also adopts a multivariate approach. The Review is critical of the application of these techniques for examining the technical efficiency of the airlines and, rejecting the findings of its commissioned studies, considers that there is insufficient information available in order to draw firm conclusions [1, p. 54]. However, this is too negative. It ignores the fact that most of the available empirical evidence points in the one direction and does not appreciate the potential severity of the problem (e.g. the analysis of Mackay [9] indicates that unit costs might be able to fall by up to 35 per cent). The Review also fails to consider the theoretical arguments which lead to the technical inefficiency hypothesis (i.e. that the regulatory system of tightly restricted competition, profit control and cost-plus pricing may lessen the incentive to minimise costs). With its final remark on the issue the Review introduces an air safety “red herring” when it claims that Australia’s safety record is an important indicator of efficiency [1, p. 55]. It is not; it is a measure of the quality of service.\(^6\) In conclusion, the Review Committee seems deficient in its treatment of the issue concerning the technical efficiency of the Australian domestic airlines.

The Review Committee fortunately is able to make more definite statements on the allocative efficiency of the industry. Taken together, the studies of Mackay [9] and Hocking [4] find also that the overall level of fare discounting offered in Australia is very low, that this indicates that the preferences of Australian air transport consumers are not adequately pursued by the major operators, and that significant efficiency

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\(^1\)The lack of attention probably reflects an anticipation that a revision of aviation policy would have then been imminent. Few might have expected that the Government's Two-Airline Policy initiatives would not be finalised until over three years after the completion of the relevant part of the Review. Forsyth [3] briefly discusses the Review and its major findings.

\(^2\)See Mackay [9] and Hocking [4].

\(^3\)See Kirby [6] for a discussion of the use of these techniques and a rejection of the Review's major criticisms of them.

\(^4\)Thus a good safety record does not necessarily imply a favourable assessment of an airline's efficiency performance. However, different safety levels, as well as other quality aspects, will have implications for empirical studies of technical efficiency which use an output measure unable to capture the quality differences. Ceteris paribus, the results will be more unfavourable for those airlines providing the relatively high quality services.
gains would result from the availability of a wider variety of price/quality options. The Review agrees with the “general conclusions” of these studies and recommends that the airlines “be encouraged to provide more innovation in fare structures” [1, p. 56].

The Committee softens this judgement by noting that innovative APEX fares had been introduced subsequent to the commissioned studies. However, this observation could as easily be interpreted as a reflection of the airlines’ response to the Review’s findings and hence may be indicative of the impact of incentives on the innovative ability of firms. The Committee also undertakes its own comparison of Australian domestic economy air fares with those of other countries and concludes that the Australian airlines perform favourably. Forsyth [3, p. 68] is critical of this exercise; he argues that it does not allow sufficiently for quality variations in economy services or for the availability of cheaper fare types and suggests that data selection can strongly influence results.

The Review also examines a particularly visible example of allocative inefficiency, parallel scheduling. It concludes that this practice is well documented, is higher than desirable and should be reduced in order to provide a better service to the travelling public. It recognises that under the existing institutional arrangements of the Two-Airline Policy there is no simple solution to the problem. Hence it can only recommend that “the Government draw the attention of the airlines to the difficulties experienced by the public from the current high levels of parallel scheduling on the competitive network and request their proposals for overcoming the problem” [1, p. 95].

III. THE REVIEW’S RECOMMENDATIONS FOR POLICY REFORM

The recommendations of the Review cover two broad areas: the structure of the air transport industry in terms of the roles of various categories of air operators and the regulation of operators within each of these categories.

(a) The Structure of the Air Transport Industry

The Committee’s strategy is to distinguish the various categories of air services required for the total aviation system, define the role of each category, and then determine the combination of roles that would result in a more efficient system [1, p. 67]. Three categories of domestic air services are identified: the national trunk service linking major cities, regional services linking centres within a limited geographical area where there is a “community of interest”, and local/commuter services which mainly cater for centres not otherwise served. Operators are broadly classified according to the type of service which they predominantly offer.

The Review considers various options for the organisation of the industry to provide these services and opts for a system with “sharply defined roles for each category of operator and specialisation of functions” [1, p. 69]. Its chosen allocation of roles is closely related to perceived market and route characteristics. The Committee recommends:

(i) A small number of operators provide trunk route services on medium and long
haul routes for all traffic densities and also short haul routes with high traffic density.

(ii) Specialist regional operators provide services on intra-regional routes and inter-regional routes (but only through intermediate stops) of low and medium traffic density.

(iii) Local/commuter operators utilise piston and small turbo-prop aircraft on short haul routes and/or routes of low traffic density.

(iv) Tight control over the interaction between different categories of operators. Trunk operators are discouraged from engaging in regional services “except with defined regional organisations oriented primarily towards the needs of the region”. Regional operators are allowed to compete with trunk airlines over some segments of the trunk network “where these segments are logically linked with their regional network”. Access to trunk airports by local/commuter operators is to be limited “except where it can be shown that infrastructure and congestion costs are not a problem”.

In making these recommendations the Committee states that it was “conscious of the need to meet the public interest and to restrict operations by any class of operators to those which would permit the most efficient use of equipment and infrastructure” [I, p. 200].

The Review Committee’s treatment of the issue of industry structure is seriously lacking in economic analysis and amounts to little more than a description of some basic airline economics plus a series of subjective value judgements. The list of advantages which the Review attributes to its chosen industry structure merely relate to the inherent advantages of different operators in serving different types of market. The features mentioned (e.g. economies of scale, fleet optimisation, market specialisation, market integration and responsiveness to consumer demands) would also be taken into account if the determination of industry structure was left to competitive market forces and would be reflected in the resultant market structure.

Thus the Review’s catalogue of the merits and demerits of the various types of operators, [1, p. 68], is largely a statement of simple airline economics, i.e. that different market conditions mean that a different type of service will be most efficient. The crucial question is what system of resource allocation — competitive market forces or bureaucratic direction — is more likely to be able to capture these intrinsic advantages of the various different types of air service operations and to thus achieve the most efficient overall system. The Review presumes that the latter is superior (there is no mention of the alternative), but no analysis or evidence is presented to support this presumption.

However, the utilisation of competitive market forces appears to offer several advantages over its alternative. Competition could be expected to ensure that the alleged advantages are real, not imagined, and given a weighting reflecting their relative strengths. For example, one might anticipate that the competitive process could more accurately assess the trade-off between economies of scale and market
specialisation. It also lessens the reliance on value judgements. Many of the concepts on which the Review depends when forming its recommendations are sufficiently vague and subject to flexibility in interpretation (e.g. community of interest, inconvenience, consumer needs, etc.) that doubts must exist as to the ability of a bureaucracy to conduct an objective assessment. The Review Committee's rejection of the competitive market alternative also denies the community the advantages resulting from inter-category competition. These relate to the policing of the market performance of each type of operator, increased dynamic stimulus to the system as a whole and an expected enhanced ability of the industry to respond to changing market conditions by re-allocation of services and roles.

In support of a policy limiting the competition between different types of operators the Review alleges several disadvantages of such competition which it presumably feels outweigh the benefits mentioned above. The Review recommends that trunk operators do not engage in regional services except with a defined regional organisation and that regional operators take over services where this is not the case. The basis for this recommendation lies in a perceived lack of responsiveness on the part of trunk operators to provide optimum services in a region which is only a small part of its total network. However, there are problems with this approach. Firstly, since most of the present regional airlines are operated by Ansett Transport Industries and since the existing trunk operators would most likely be given the first option to establish any new regional organisation, it seems unlikely that a re-allocation of services from trunk to regional operators would have a significant impact. Secondly, the Review attributes perceived deficiencies with current regional services to a lack of a regionally based organisation. However, the problem is likely to be more fundamental, i.e. the lack of open market conditions at both the regional and trunk levels. Open market competition could be expected to substantially overcome any significant areas of unsatisfied demand. In contrast the Committee's approach carries the danger of merely changing the identity of the unsatisfied group of air travellers.

The Review considers that one disadvantage of allowing local/commuter operators to fly through a region to trunk airports is that this overlaps with regional operators. Thus it appears that competition between different types of operators is, in itself, harmful. The Review's attitude to such competition is further revealed when it considers some of the effects of US deregulation [1, p. 63]. It notes "considerable concern" when large airlines switch services from some of their routes to the more lucrative routes of smaller airlines, resulting in financial difficulties for the latter. It would seem that in the Committee's eyes resource allocation through the market mechanism is, per se, undesirable.¹

Finally, the Committee considers that allowing substantial inter-category competition "carries the danger of operators attempting roles for which they are not

¹The Committee may be fearful of the possibility of predatory competition. However, it should be remembered that predatory competition is also possible under regulation. There is clear evidence that such behaviour has been allowed in the past by the Minister for Transport and his Department. See Kirby [8, p. 80]
ideally equipped" [1, p. 69]. However, the opposite is also true: a regulatory system which denies operators the ability to undertake certain activities carries the danger of preventing them from performing roles for which they are ideally equipped. Thus mistaken investments can occur with both regulation and competition, though the mistakes of the former may perhaps be less easily detected.

The Review considers three other issues which have an influence on industry structure. Firstly, it concludes that continued state ownership of Trans-Australia Airlines is a necessary part of the economic regulation of the domestic air industry [1, p. 61]. However, no evidence is offered to show how state ownership aids economic regulation or to justify its apparent necessity. State ownership would only appear necessary if there were significant differences between government objectives and normal commercial goals. This is not the case here since a consistent theme under the Two-Airline Policy has been to ensure that TAA behaves as closely as possible to its private competitor. Adequate influence can be exerted by the Government through its licensing and other regulatory procedures. The potential ability to influence the behaviour of a private company through the threat of preferential treatment of the state firm is also not a conclusive argument in favour of state ownership, since such ownership is clearly not necessary for preferential treatment (e.g. the position of Ansett Airlines of Australia relative to other Australian private operators).

Secondly, the Review is only lukewarm to the possibility of cabotage, i.e. utilising spare capacity on international flights for domestic air transport purposes. The Committee is concerned that while consumers might enjoy some cost saving the net effect would be a diversion of revenue away from Australian operators [1, p. 100]. However, this viewpoint ignores the resultant efficiency gains to the community, thus degenerating into a dubious anti-trade argument and perhaps reducing largely to the unsupported value judgement that wealth should be redistributed from Australian consumers to Australian domestic air operators. The Committee also notes the "wider implications" of cabotage, in particular the small likelihood of reciprocal arrangements with other countries. Hence attention is restricted to the use of the spare capacity of only Qantas, Australia's international carrier [1, p. 122]. However, the inability to capture all the potential gains from trade hardly seems a sensible reason for refusing to take advantage of those which are available. It is plainly inefficient not to use empty international airline seats no matter who owns them. Finally, the Committee argues that consumers should have access only to international flights departing Australia, since the public "needs to be able to make plans for flights with some degree of certainty and to be able to interline with other domestic flights" [1, p. 122]. However, the lower quality of service due to the more uncertain departure time would be reflected in the price charged for such a ticket. Thus this recommendation merely excludes the consumer from the possible choice of a lower price/quality option and appears to have little merit.8

Finally, the Review Committee devotes little attention to charter operators. While this can be related to the terms of reference, the limited comments the Review makes

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8Consumers have shown a willingness to accept similar uncertainty with respect to Standby fares on domestic flights.
on this issue cause concern. For example, it urges that strict enforcement of charter operations is “important to protect scheduled air services from unauthorised charter incursions” [1, p. 178]. These comments appear to reflect a value judgement on the inherent worth or value of different types of airline operations and again the major impact is to deny consumers the choice of a different price/quality product. Without further economic analysis a hierarchical approach to regulating the airline industry based on perceived quality of service appears inefficient. The real problem is the provision of optimal combinations of price and quality, a much more difficult task for regulators.

In summary, the Review Committee’s consideration of the issue of industry structure is fundamentally deficient. Its description of various factors affecting the economics of airline markets leads to the obvious conclusion that some operators are better suited to servicing certain markets than others. The Review merely presumes, without analysis or consideration of alternatives, that maximum efficiency can be achieved through bureaucratic direction and presents its blueprint for future efficiency. Both the chosen method of resource allocation and the detailed plans can be criticised.

(b) The Regulation of Air Transport Operators

Many of the most important recommendations of the Review relate to the regulation of activities within each category of air operators, in particular the Two-Airline Policy. In general the Review recommends retention of the principles of two major airlines operating trunk route services and of capacity control, but proposes increased competition between these two operators.

The Review Committee concludes that “the size of the Australian market would not support a third carrier on the trunk network as a whole”, and that the Government should continue to maintain the general principle of the Two-Airline Policy by controlling entry through import regulations [1, p. 74]. This recommendation seems entirely based on an assessment of the degree of economies of scale in airline operations; yet the Committee does not specify any evidence to support its assessment which runs counter to conventional economic wisdom. However, even if economies of scale are present, why close the market? A fear of not enjoying these economies does not appear to be the reason, for the Review notes that “it seems unlikely in any case that there would be more than a small number of operators able to provide such services” [1, p. 72]. In addition, Kirby [8, Chapter 2] argues that the ability to monopoly price ultimately comes from barriers to entry, which may be caused by entry and exit costs, and that these are distinct from economies of scale per se. This discussion rejects the theoretical validity of the simple natural monopoly argument which seems to underlie many calls for regulatory intervention. If it is thought that the market outcome will capture the available economies of scale and will not result in substantial monopoly exploitation, it would

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9See Keplinger [5, p. 196]. Mackay [9] estimates that if a third airline were introduced and the market shared equally average costs would rise by only 2.5 per cent.
appear that a recommendation for market closure could only be based on a belief that regulators are better able to select the most efficient operators than is the market mechanism, or that the current two carriers (the consistent choice) are more deserving than other potential entrants. In either case some explicit discussion would seem warranted.

The Review Committee rejects the option of having a single operator on the trunk network [1, p. 73]. It argues that savings from economies of scale would be more than out-weighed by "the lack of incentive of any monopoly to reduce costs and operate in the public interest". But this statement also implicitly suggests that there are few economies of scale, since it seems unrealistic to assume that the regulatory effectiveness of the Department of Transport would substantially deteriorate if there were only one operator rather than two (though, of course, one might be sceptical of its absolute effectiveness in both cases). The Committee correctly recognises that a Three-Airline Policy would not necessarily raise economic efficiency through increased competition since there is no assurance that three operators would not act in the same manner as two. Yet it fails to appreciate that in a tightly regulated environment exactly the same reasoning applies to a Two-Airline Policy compared to a One-Airline Policy. The basic principle which should not be overlooked is that the degree of competition in an industry depends more importantly on barriers to entry rather than on market concentration; and there does not exist a more effective barrier than government prohibition of the entry of new firms.

The Review also holds a restricted perception of competition on the trunk network. It presumes that any new entrant into these markets will be of the same size as the present operators. Thus it recommends a small number of trunk airlines "because of the need for large operators to provide the necessary nationwide organisations and to operate the larger and more economic aircraft" [1, p. 69]. This presumption of similar size need not be the case. It appears quite feasible that a new entrant could start small by specialising in a particular market and, if successful, grow over time.

The retention of the principle of capacity control is recommended on the grounds that any major relaxation would produce undesirable results similar to those experienced overseas, i.e. overcapacity, low load factors and marginal profitability [1, p. 59]. However, this popular fallacy fails to recognise that "excess" capacity is caused by setting the regulated price "too high" and that a lower regulated price, by lessening the scope for non-price competition through scheduling frequency, will reduce the total capacity offered by regulated airlines. Recognition of the fallacy also offers an alternative strategy: let market forces determine the price/quality combination purchased by consumers. The Review Committee appears unaware of the existence of this option.

While the Review recommends limiting the trunk network to two major airlines and controlling the capacity of each, it also concludes that these operators "have reached a
stage in their development where they could withstand competition on some routes and that this would be to the benefit of the public" [1, p. 74]. To allow for the opportunity of more innovation and greater competition between the airlines the Committee recommends the repeal of rationalisation provisions of the Airlines Agreements Act. This action would remove the formalised collusive arrangements which are available, perhaps raising the costs of collusion and reducing the ability of one operator to hinder the initiatives of the other through the rationalisation procedures. However, while this action might increase the ability to innovate or compete, the proposed reform has less impact on the incentive to do so (e.g. there is still no threat of outside entry, while continued profit control through cost-plus pricing inhibits more risky innovations and permits cost inefficiencies). Hence the observed performance may still fall well short of its potential.

The Review Committee concludes that competition would also be encouraged by a less rigid approach to fare approvals [1, p. 59]. It argues that this would allow room for experimentation and innovation with lower fares to attract new business and to meet the needs of a greater proportion of the potential travelling public. Hence it recommends approval of fares based on the demonstrable cost of and demand for the service and allowing the fares actually charged to vary upwards or downwards by 10 per cent [1, p. 80]. Apart from the point that the perceived need for fare flexibility can be taken as an admission of the regulatory failure of price setting procedures to ensure efficiency, there are likely to be political difficulties with a regulatory system of costing a service and then allowing a higher fare. Once again the Review fails to consider the viability of the alternative strategy of allowing competitive market forces to determine prices and qualities of service, to ensure that prices are related to costs and to minimise the risk of predatory pricing.

The Review Committee's analysis of and recommendations for local/commuter services contrast strongly with that of and for the trunk airlines. The Review concludes that "facilitation of entry and exit by operators providing local/commuter air services... is desirable in the public interest, since it fosters economic efficiency, through competition and flexibility in the supply of specific factors" [1, p. 192]. Hence it recommends that the importation of aircraft suitable for commuter services should not be restrained unless for operational reasons or where these aircraft are "capable of competing with the major operators as a trunk network aircraft" [1, p. 179]. The Committee also acknowledges the effective market policing ability of competitive forces when it concludes that "although a service may already be provided by one operator, the fact that entry is open to other operators minimises, if not removes, the danger of monopoly power being exercised" [1, p. 192].

The difference in approach to trunk and local/commuter operators appears to be based solely on cost conditions: "there was no evidence in support of the existence of economies of scale [for the latter]" [1, p. 192]. Yet the notion that economies of scale are the prime determinant of the feasibility and efficiency of the competitive process is, as indicated above, incorrect. Economics of scale, per se, are not necessarily a barrier to entry and hence a high degree of industry concentration need not preclude the attainment of economic efficiency via market mechanisms.
In a similar vein the Review's consideration of the air freight issue is also inconsistent with its analysis of passenger trunk route services. The Committee concludes that the Two-Airline Policy has restricted the development of specialist air freight services and has slowed the growth of the total market. It recommends that air freight be excluded from the terms of the Two-Airline Policy and that specialised air freight operations be permitted [I, p. 118].

However, the Committee again shows little concern for the problems which supposedly plague a competitive passenger market. For instance, the risk of overcapacity is considered small since "normal commercial forces would tend to resolve that problem" [I, p. 117]. Why this difference in approach between freight and passenger markets? The Committee stresses the different characteristics between the two markets; the former is distinguished by such factors as an imbalance of traffic flows and scarcity of backloading opportunities, limited economies of scale and direct competition from road freight services. However, these factors would not appear to seriously affect the relative feasibility of competition in the two markets.

The underlying reason appears to relate to the impact of any permitted competition on the two major operators. The Committee remarks that it "concerned itself primarily with the likely effects of additional freight services on the stability and viability of the industry as a whole and the need to satisfy public demand" [I, p. 117] and, noting that specialised freight operators offer a different sort of service to the trunk airlines, considers that "any diversion of revenue away from the domestic airlines is likely to be minimal". Thus it seems that the Review Committee has fewer objections to the satisfaction of consumer demands via specialist freight services, which mainly attract customers from the road haulage industry with little impact on the major operators, compared to the provision of specialist passenger services such as shuttle and charter operations, which might be more likely to divert traffic from the major operators.

IV. An Overview

An overview of the Domestic Air Transport Policy Review emphasises several important issues. Firstly, the Review illustrates the inability of the existing regulatory mechanisms to directly and positively influence the industry's economic efficiency. Hence the regulators must rely on the circuitous approach of increased surveillance of the industry (e.g. some of the most frequently occurring recommendations relate to further study, evaluation and monitoring of airline performance) and jawboning (e.g. the Committee's desire to encourage fare innovations and the de-paralleling of schedules). However, the Review is unable to provide the means to guarantee that its exhortations will be acted upon.

Secondly, one should note the selective use of economic theory on the part of the Review Committee. The textbook application of this theory to cases such as the effect

12 The Review Committee's treatment of the air freight issue may be making a virtue out of necessity. The Secretary of the Department of Transport had already issued in February 1977 import permits for aircraft to be used in specialised freight operations.
of subsidies on incentives, air freight overcapacity and competition and concentration of commuter operators can be contrasted with its incorrect application to the issue of economies of scale for trunk operations and its complete absence when considering the questions of technical inefficiency under the existing regulatory framework and the determination of the overall structure of the industry. The Review appears willing to give a substantially increased role to competitive market forces only when the market segment is small and insignificant or when it predicts that there will be little impact on the major operators. 13

Finally, it should be noted that there is a bias in the approach of the Review Committee. It remarks:

The complexities of modern society place increasing demands upon governments to allocate national resources in a number of different and competing ways. In allocating these resources the Government must apply a combination of skilled administration and sound technical expertise. [1, p. 133].

This bias results in a failure to give due consideration to the alternative method of resource allocation — the competitive market — and leads to the submission of a Report in which a large proportion of the recommendations coincide with increased work opportunities for air transport bureaucrats.

The Government's new Two-Airline Policy arrangements were at last finalised in June 1981. 14 These policy initiatives reflect the broad thrust of the Report. The new Agreement for the first time contains precise definitions of the networks and functions of the trunk, regional and international operators. The regulatory strategy of developing distinct industry segments is clearly confirmed. In addition, the fundamental nature of the Two-Airline Policy is maintained: trunk route passenger operations are still to be largely restricted to the existing two major operators (air freight is removed from the Agreement). Not only will the control of aircraft capacity offered by these two airlines continue, but control will also be extended to other operators wishing to import modern jet equipment. Finally, in the name of increased competition, the rationalisation provisions are relaxed to the extent that the two major airlines will no longer be compelled to confer on certain matters (though they may do so if they wish). 15

Recent economic analyses of Australia's domestic air transport industry have generally been highly critical of the industry's performance and its regulatory

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13 Economic analysis offers little support for the overall thrust of the Review Committee's report. In view of this apparent conflict it is surprising that the Review does not give any discussion of its perception of the main criterion for selecting its policy recommendations, i.e. the "public interest". An explanation of the chosen regulatory recommendations, which places less emphasis on bureaucratic mistakes or its inability to secure economic efficiency, might be found in the "private interest" or "pressure group" theory of regulation. A discussion on the likely applicability of this theory to the regulation of Australia's domestic airlines is contained in Kirby [8, Chapter 7].


15 However, they are still compelled to consult on core fares, load factors and aircraft utilisation.
framework. The Domestic Air Transport Policy Review is, in many ways, a notable landmark in the development of the industry and its regulatory policies. It has undoubtedly provided considerable stimulus to research efforts in this field. However, the fact that this Review, which is here judged to be of dubious quality, has been used by some as an authority in the air regulation debate and has had the basic thrust of its recommendations implemented under the new Two-Airline Policy arrangements can only be a cause for further concern.

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